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MURRAY, J.

A

TREATISE

ON

PULMONARY CONSUMPTION;

ITS

PREVENTION AND REMEDY.

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PULMONARY

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PREVENTION AND REMEDY.

SECOND EDITION.

BY JOHN MURRAY,

F.S.A. F.L.S. F.H.S. F.G.S.

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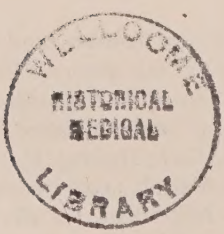

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TO

DR. PRATTINTON,

AND

JAMES FRYER, ESQ.

BEWDLEY;

AND

RICHARD HUGHES, ESQ.

STAFFORD;

TO RECORD

THE AUTHOR'S ACKNOWLEDGMENTS.

ERRATUM.

Page 30, line 19, *for* forglove, *read* foxglove.

CONTENTS.

CHAPTER I.

Page.

Introduction—Pulmonary Consumption—Predisposing Causes—Hereditary Consumption—Symptoms—Tubercles, Hydatids, &c.—Remedies—Venesection..... 1

CHAPTER II.

Food—Idiosyncrasies—Amusements and Clothing—Influence of Exotic Clime—Cursory glance at some of the chief Places resorted to by the Invalid 45

CHAPTER III.

Tropical, Insular, and Alpine Climate—A Marine Atmosphere—The Sea Coast—Town and Country—Influence of Vegetation..... 87

CHAPTER IV.

Chemical Constitution of the Atmosphere—Phenomena of Respiration—Artificial Atmospheres—Their Effects—Oxygene—Nitrous Oxyde—Chlorine—Nitrous Acid Gas..... 107

CHAPTER V.

Hydrogene—Carbonic Acid Gas—Uniformity of Animal Temperature in Hot and Cold Atmospheres—Relations of the Animal Functions to Temperature—Radiation; its Effects..... 127

CHAPTER VI.

Chlorate of Potassa; its remedial Effects on the System—Contrast with Digitalis—Obtainment and Precautions in the Application of Chlorine and Nitrous Acid Vapour—Efficiency, conjoined with Chlorate of Potassa, in Pulmonary Consumption—Practical Illustrations—Conclusion..... 145

ADVERTISEMENT.

" With step as noiseless as the summer air,
" Who comes in beautiful decay ? Her eyes
" Dissolving with a feverish glow of light;
" ———————————— and on
" Her cheek a rosy tint, as if the tip
" Of beauty's finger faintly press'd it there:
" Alas! CONSUMPTION is her name."

WE have ventured in the following pages to submit to the medical world some considerations on the cure and prevention of Pulmonary Consumption, in the firm belief that this good has been achieved: there is nothing empirical in the case, but the plan proposed is based on the solid principles of inductive truth. The ratiocination seems altogether indisputable, and the question set at rest by the evidence of fact adduced in its favour,—founded on reasonable deductions and correct analogies. Accident has had no part in this discovery; it is the immediate deduction *ab initio*, from, we humbly conceive, the soundest principles of legitimate science. The annual drain on the population of the British empire, in the sacrifice of so many lives, and those generally the worthiest of human nature, and at the most promising age, is appalling; and we could not be insensible to an appeal that has wrung so many bosoms, nor refuse our contributions towards elucidating the cure of a disease that has claimed so many

victims to swell the amount of her triumphs,—whose exterminating scourge is increasingly widening the breach, and thinning the ranks of human nature. The consideration of the subject has been the constant image of our thoughts for the last twelve years, and the principles adopted for our government were, that any remedy, to be successful in Pulmonary Consumption, must be of a two-fold relation, —the one, such as could be brought through the medium of respiration into immediate contact with the inflamed mucous membrane of the lungs, and be there sanative, in reference to tubercles which are forming, or already formed,—and the other, such as might diminish the inflammatory tendency of the circulation, by subduing increased action, without reducing the tone and strength of the system; not of course trenching on the general treatment deemed necessary by the attendant medical adviser, as the varied symptoms and constitution of the patient might seem to demand;—the peculiar therapeutic *materiel* being all we ever presumed upon, from not being initiated into the practice of medicine: though that chemist has studied the science to very little purpose who has yet to learn the relative use of his discoveries in MEDICINE, and the kindred sciences of PHARMACY and MATERIA MEDICA. We presume on having discovered an important desideratum, and it is hoped that any merit that may belong to it will be unhesitatingly awarded: that humble tribute being all we claim. The greater part of our means has been expended in the cause of our fellow-creatures. Altered circumstances will prevent us in future from repeating or extending sacrifices, consistently with prudence and the duty claimed by those dependent on us.

The pecuniary sacrifices which we have made from time to time in the cause of philanthropy, by instituting experiments interesting

to suffering humanity, have been considerable, and we are not ashamed to confess have even sometimes involved us in temporary difficulties. It is our anxious hope it may be ultimately found that neither our time has been unprofitably spent, nor that we have altogether lived in vain, only regretting that our limited means have circumscribed the power of doing good.

We do hope that we shall not be accused by the Medical Profession as an officious meddler in a question which is rather exotic to our avocations. If this disease, so formidable in the number of its victims, and pronounced incurable and hopeless by the most distinguished Medical Practitioners,—and we have cited our witnesses to this attestation from among themselves—had been less unpromising, we should not have thought it a legitimate question for us to grapple with. The Physician acknowledges his dependence on the Chemist for the greater proportion of his remedial means, and a generous and noble Profession, which boasts of its liberal feeling, will not esteem it at all necessary that we should have previously obtained a *diploma* to be useful. We do confess we feel cheered and happy in the reflection, that even when we have mingled with the clods of the valley, and our name and memory have perished, numbers yet unborn may owe their lives and rescue from suffering to the remedies we have freely promulgated, and which, so far from benefitting their author, have subjected him to much thought and anxiety and many pecuniary sacrifices. This delightful anticipation is enough for us: we cannot reasonably expect any return whatever, nor can any motive for the present publicity be justly attributed but to the wish to do good and benefit our fellow-creatures.

Dr. Cottereau, of Paris, has invented a machine for inhaling Chlorine in Pulmonary Consumption, and one case after another

has been submitted to the attention of the Institute.* It is now nearly twelve years since we experienced the benefit of Chlorine in our own person in pulmonic disease, and it has been freely communicated to numbers, as well in our public prælections as private intercourse. In promulgating the interesting facts presented to us from time to time, we believed that we only fulfilled a sacred and imperative duty. We might easily adduce, from innumerable sources, conclusive proofs that the first idea of curing Pulmonary Consumption by means of aërial Chlorine *originated with us.* We made no secret of it, and it has been these twelve years dispersed and diffused over many localities in England, and numbers can at any time be brought forward to attest the fact.

The announcement of a remedy for Consumption, we are quite aware, will draw upon us the severest scrutiny. It has baffled hitherto the medical science of a world, and, in every work on medicine we peruse, it is regarded as hopeless, or pronounced as incurable. The title that was written over the couch that enshrined the victims of Consumption, seemed to us to be that which was inscribed over the portal of the "Inferno" of Dante—"Lasciate ogni Speranza voi ch' entrate;"—for, however hope might kindle up her visions in the hectic breast, those who could best judge knew there was no remedy. We have thought it both imprudent and unwise to make a *fictitious* display of appeal to the authors we have consulted —a generous and noble host comprise their ranks. On the continent we have a Vogel, a Murray, a Bolzano, a Laennec, a Lombard, and others; and in Britain, who has not heard of an Armstrong, a Young, a Baron, a Hastings, a Forbes, a Johnson, a Williams, a Stokes, and

* Gannal has written two *Mémoires* on Chlorine: and these have been translated by Potter.

many more, whose talents and writings reflect honour on their profession and credit on themselves? But, alas! while these eminent individuals have written wisely on the pathology and diagnosis of this formidable disease, whenever the topic of cure is discussed, the tone becomes heartless and desponding.

We have in like manner an aversion and reluctance to a parade of cases, as it would be perfectly inconsistent with our avocations, which are not medical but chemical. We think we do much better in offering merely to the world an honest and faithful exposé of what we believe in our heart will be eventually found both remedial and preventive in reference to a disease the fatality of which is increasing fearfully, and the annual summary of which already amounts to nearly seventy thousand within the limits of the British Isles. In a paper by Dr. Blackmore, in a recent number of the Edinburgh Medical and Surgical Journal, it is mentioned that pulmonary disorders destroy nearly one-third of the inhabitants of great towns. At Truro, in Cornwall, it is even stated, by Mr. Phillips, to be 75 or 80 in 100. We are not foolish enough to suppose that if the lungs are completely destroyed they can be created anew; but if the integrity of the lungs is still preserved, even when invested with disease, the means recommended, if the *vis medicatrix naturæ* be not paralyzed by venesection, &c., may bring relief and cure even at the ninth hour.

We should be ungrateful were we to omit our special acknowledgments to our much esteemed friend, Richard Hughes, Esq. Surgeon, of Stafford, to whose kindness we are much indebted, and whose anxiety and readiness to second our endeavours to combat this disease successfully we cannot laud in sufficient terms; we have contented ourselves in quoting verbatim from some of his more

recent letters to us as the result of what he has found triumphant in his own immediate practice; and have found none who have entered with the same willingness and disinterested anxiety into our views and plans.

The influence of clime and a marine atmosphere we have endeavoured to solve differently from those who have hitherto considered the problem, and the views we have sustained are offered to the public, as far as the *rationale* of the curative means is concerned, as to our own humble apprehension, in a manner satisfactory and complete.

This work would have appeared some years ago, but it has been postponed from time to time in the hope of finding some substitute for chlorine that might be equally effective, and not so irritating to the lungs, and we wished moreover that experiment should determine the question beyond appeal. In the vapour of nitric acid, or red fuming nitrous acid, we have discovered what we were in quest of, while we wished also to obtain the approving opinion of medical gentlemen; that, strengthened at every point, we might be able to plead for acceptance with better grace and greater chance of success.

20th July, 1830.

PREFACE

TO THE

SECOND EDITION.

THE former Edition having been more promptly disposed of than we had anticipated, we have it not in our power to do as much in the present instance as we could wish; still, we have neither been inattentive nor ungrateful: the new materials which have been added we hope will be found interesting and important. We have corrected some verbal errors, and availed ourselves of the hints of some friends; still these are very limited, from the delicacy we felt in preferring the request to be favoured with such critical observations; and while we acknowledge our obligations to Mr. Hughes, we should apologise for the introduction of some inadvertencies in his former communications, which we have now corrected. We regret that we have also inadvertently mis-stated some of the views of tubercular disease, as sustained by that eminent physician, Dr. Baron. Our memory is sometimes defective, and the circumstances under which the work was originally written, must be our apology. We feel grateful to those who are good enough to set us right: we are sufficiently fallible, and trust will be found ever ready to confess our errors. To the *Monthly Review*, *Journal of Practical Medicine*, *Spectator*, and *Record*, our most grateful acknowledgments are especially due, and are most sincerely and respectfully tendered: we are proud of their good opinion. Many periodicals that we may not have had an opportunity of seeing, should they have made their critical remarks, now unnoticed, must impute a seeming want of courtesy to the right motive.

From medical journals our reception has been all that we had a *right to expect.* Roused by a simultaneous impulse, in hostility against quacks and quackery, we had reason to fear that this zeal might, in some cases, have levelled a javelin at us, and included us in its condemnation. This, however, has not been the case; and, once for all, they may be assured not one of their conclave holds empirics in greater abhorrence than we do; and we have too often expressed this opinion to leave any doubt as to the validity of our sentiments on the subject.

I. North of England Medical and Surgical Journal, No. 11, November, 1830, p. 258: Dr. W———, of Leeds, groups together Hydrophobia and Pulmonary Consumption, in one article. It is extraordinary that the editor waives all critical notices or remarks whatever; excuses himself from the task by saying, that we want the "necessary qualifications;" because the "action of remedies requires the habits of a practical medical man," &c. We fear this odd sort of apology must be held as every way unsatisfactory by the readers of that ably conducted and otherwise excellent journal; and we can assure Dr. W., that the utmost dissatisfaction has been expressed by *medical gentlemen* to ourselves on this very point. That we are "not a *regular* combatant in this untrophied warfare," but a "volunteer," is no apology whatever, and will not be accepted. We shall be glad to see some *reasons* put on record by this able and excellent individual: in reference to the present Edition, a summary dismissal like this will impugn the conduct of those who *have given their opinion* and weighed the evidence. That talented physician, Dr. Hastings, of Worcester, has acted a very different part. In another part of the volume we have considered his cases, and feel indebted for his noble and manly conduct.

II. London Medical and Physical Journal, Vol. 64, No. 382, p. 567. The editor, John North Esq., imagines we have "gone out of our way" to look out or hunt after peculiar expressions and fine phrases. Now we can assure this literary critic we have done no such thing; and we engage that such expressions as he objects to have given us less trouble than his common phraseology costs him.

We fear we are chargeable with some peculiarities of expression; but they are *natural*, not forced; and we may surely be allowed to tell our tale in our own way. The mechanical act of writing is with us not a favourite pursuit; and, as it sometimes prevents transcription, may give rise to error. As to the two expressions singled out, one happens to be a quotation from Dr. James Johnson; and as to a little *feeling* being displayed, we cannot see, with this writer, that it is really "out of place in medical essays:" others, as well as ourselves, have done this. It appears, however, that our little volume is not a "*treatise*." By his leave, however, as it *treats* on Pulmonary Consumption, by all the rules of dialectics laid down by those authorities, Johnson, Sheridan, and Walker, it must needs be a "treatise." *Seriatim*, however, we must say, all this quibble about verbal criticism is, when the importance of the question is properly weighed, of minor importance. A few expressions we have corrected, and trust they will be found more prosaic and more agreeable to his critical judgment.

III. Dr. Ryan's Medical and *Surgical* Journal, October, 1830. In conjunction with some notice of Gannal, on chlorine in Consumption, a French pamphlet, translated by Potter, Dr. Ryan is pleased to say of our volume, "*We* can tell Mr. Murray that things taken into the stomach can never cure Consumption; it must be by inhaling," &c. We know no person that has said anything to the contrary; and, for our part, we should not go to Dr. Ryan to obtain the information, were we in quest of any thing of the kind. Dr. Ryan says that our *only* remedy is *chlorate of Potassa*. "Marry! what comes next?" What will the public say of the *honesty* of the editor of this journal, after this statement, in the face of the cases he *has quoted*, wherein *gas* is repeatedly mentioned? We have heard of works being reviewed that never had been read; and, but for the quotations, we should have singled out this as a specimen: we are inclined, therefore, to impute the extraordinary inference to some obliquity of intellect, or idiosyncrasy of judgment,—we shall not presume to call it wilful perversion. A medical gentleman, in adverting to this singular opinion, has said, "this is too bad." The public will appreciate the opinion accordingly. As to

the question of priority, in recommending chlorine in Pulmonary Consumption, we may again state, once for all, that we have made no secret of it, but have been in the habit, constantly, ever since 1818, of publicly promulgating this opinion as often as opportunity occurred.

Let us not be misunderstood: we treat not about the constitutional peculiarities, and special and auxiliary treatment, varying with circumstances often complicated and combined, or with the office or business of a physician. We presume neither to meddle with nor give an opinion on these things; our sole purpose is to point out to the medical practitioner two agents of great power and virtue, that hold out a rational and well-grounded prospect of acting both as preventive and curative in a disease that, EVERY WEEK, within the limits of Great Britain, brings more than ONE THOUSAND victims to the grave, or *one hundred and fifty every day*. By their own confession, medical men are little else than passive spectators in this scene of death and work of destruction. We were at length led to point out the grounds of our opinion, and finally to adduce something more than theory: our confidence is yet nothing daunted, but our convictions of its efficacy rather strengthened. The Sangrado system is fast passing away, and is now the bone of contention in the medical profession. We have pointed out what we conceive to be an admirable substitute for that uncertain and dangerous drug, *digitalis*. Our medical studies may in some cases be imperfect; and our memory no doubt chargeable with mistakes, but these minor points will be overlooked, as far as inadvertencies in stating the opinions of others, or theory, or speculation go. We have not practised medicine, nor have we ever said we did; but this did not prevent us conjoining medicine with our other studies—from listening to its instructions or pursuing its details. Those who are acquainted with us, or with what we have written, must be, we dare say, sensible that we are anything but a *theorist*, or chargeable, in the most remote degree, with the opprobrious name of empiric. Dr. Hastings, in a little playfulness, says we are "a candidate for medical renown." We cannot see how this can be; or if we were, what good it could do us: it has done none, nor is it at all likely to do. Even in the first impression of this work, from the many copies we dispensed gratuitously, we are

considerably out of pocket; and those who know the heavy expences of publication, the cost of paper and printing, the demand of Stationers' Hall, and the tribute claimed by booksellers, are very sensible that the ultimate amount to the author, if a *work on science*, is generally a *loss*. We however feel and appreciate the value of those sentiments which have given our motives such handsome credit.

The "auri sacra fames," alas! is of very little worth; and if the individual is actuated by no higher motive in his actions and conduct than an endeavour to catch the hosannas of the multitude, or the incense of popular applause, we may truly pity his weakness. He courts a contemptible immortality, which the slightest incident, real or supposed, will sweep away; at best, 'tis a short-lived zephyr, and the trumpet of fame seldom peals till the trump of death has already proclaimed that his ear is insensible to the sound. With the long-protracted neglect which visited the discoveries of a Jenner, and the bitter persecuting spirit which hunted a Harvey (immortal names!) before us, we need not wonder if a remedy propounded for this fell disease meet with a sneer, or be assailed by supercilious contempt. Dr. Charles Hastings, of Worcester, no mean authority in this "untrophied warfare," has risen superior to all such narrow-mindedness: he has acted nobly and independently, and won an additional wreath to his well-earned fame. Pulmonary Consumption is certainly an indefinite expression, and that of *tubercular Consumption* would be more appropriate. The former, however, is in common currency, and having been originally adopted, we are not willing to change it in this new edition, and it is the less necessary, since what is meant by it has been explained.

We have waived the introduction of additional cases, and which have been offered, choosing, at the present moment, rather to confine ourselves to remarks on Dr. Hastings's cases, and being more anxious that other examples should be fairly brought before medical gentlemen, through the medium of medical journals which they are in the habit of consulting, and which will wear, in their estimation, a less suspicious appearance.

We confess that we have received more courtesy from the medical profession than we *expected;* for the prospect we entertained on

this head was most cheerless, and not without some reason, as the following fact will prove. Two sons of a physician of eminence, with whom we considered ourselves on terms of sufficient intimacy to expect the courteous reception of a friendly note, seemed to us likely to become the victims of Consumption, and in a stage sufficiently advanced to warrant a trial of nitrous acid gas and the chlorate of potassa. Suffice it to say, that the note we wrote was *not even acknowledged;* and both these individuals fell victims to the disease (one of them a physician) soon after, with only a few weeks interval between. We could say much more, but are anxious to drop the veil over a subject rather of a painful character, and anything but merited on our part. We must, therefore, say we are agreeably surprised that Dr. Hastings has admitted *so much,* notwithstanding that the cure of Consumption is esteemed so trifling, or so much the offspring of chance, that a dose of chalk and water may achieve the conquest!

IV. Edinburgh Medical and Surgical Journal, CVII., April 1, 1831, p. 384. In this periodical there is a very extraordinary notice of our work; and, we fairly confess, we are utterly at a loss to understand what the *anonymous* editor means. The remarks seem to be a *mere echo* of observations that had already been made in Ryan's Medical Journal, and which we have noticed; or, if this editor has actually seen and read our "Treatise," he is chargeable with direct falsehood; but let the quotation speak for itself.

"Mr. John Murray proposes to cure it (tubercular Consumption) with the chlorate of potassa." We deny, in *toto cælo*, the groundless assertion: such an idea never was, and never could be entertained. *Chlorate of potassa* is adverted to as a mere auxiliary, subordinate and only subsidiary.

"Mr. Murray is not of the medical profession ('Aye! there's the rub!'); but, stepping forth in the pure capacity of philanthropist, implores merciful treatment at the hands of those on whose province he ventures to encroach." This is very dignified and very dictatorial. We leave the pride-offended editor to rear his crest at leisure, and lord it as he may over his species, no matter whether entitled to respect by their attainments or not, or whether

truth and justice may claim the deference due to them. This *worthy* critic thus continues his ebullition: "he is, consequently, not a fair object for any severity of criticism (how kind, gentle, and forbearing!); and, therefore, all that we shall say of his treatise and his treatment is, that we have in vain searched the former for a sufficient body of facts (it is *reluctantly* admitted that there are *facts*, and they are always stubborn and obstinate: that they are not more numerous is chargeable, *not to the author*, but directly and immediately to the members of the medical profession) to warrant his sanguine hopes; and have made trial of the latter (what?), without being able to remark any operation, either therapeutic or physiological from the doses (chlorate of potassa?) he recommends." It is needless to wage war against a "lying spirit;" and really the individual who could write such rubbish is not "a fair object for any criticism" whatever.

"Quem Deus vult perdere prius dementat."

We should recommend to the consideration of this editor the following maxim, as a safe rule for his conduct; and he will find his interest in adopting it:

"Soror justitiæ
"Incorrupta fides, nuda que veritas."

With regard to *chlorate of potassa*, we may just remark, that, at the present time, *many* medical practitioners are employing with *eminent success*, on our recommendation, this very agent, in catarrhal affections and *cynanche tonsillaris*; it is almost a specific in chronic cough. So much for the rash and unwarranted assertion, that a *powerful and most energetic salt* is void of any therapeutic effect! We defy him to get rid of the dilemma; either he has tried it or he has not. If the latter, what are we to think of his candour, honesty, or integrity? If the former, how are we to account for the fact, that the statement is flatly contradicted by the experience of every one else? Irrespective of the desultory remarks on the general treatment, and observations on the common medical practice in Pulmonary Consumption, the remedial means that we have recommended are the vapour of nitric, nitrous acid, or chlorine. It is not impossible that this person has confounded chlorate of potassa with chlorine, considering them identical, or conveniently con-

vertible terms. We should, therefore, recommend him to ask Dr. Hope whether there is any difference between chlorine, and chlorate of potassa; and we doubt not that this eminent chemist will answer in the affirmative, and that there is all the difference in the world between a *peculiar gas* and a *peculiar salt.* As to the *discrimination* of this sçavan, the severity of his remarks on an interesting work of Mr. Fawdingdon, entitled " a case of Melanosis,"* will not soon be forgotten: a work characterised by much patient investigation, and acute though modest remarks; one, for which the medical world should have been grateful, as descriptive of the history and phenomena of a comparatively rare and singular disease, drawn up with care, and illustrated by accurate and highly-finished engravings; and a work, too, even on the supposition that all the copies had sold, could never have been expected to remunerate the author; but that author has lived to see the views and opinions there propounded, adopted by the medical faculty of Dublin. Facts of this kind should make our author cautious, remembering that those who dwell in houses of glass should be careful how they throw stones at their neighbours' windows. For the rest, the experience of Hastings and Cottereau may be appealed to, in refutation of any objections this editor may advance with respect to chlorine; though it is sufficiently remarkable that, after *contriving to overlook* the statement of the curative effects of chlorine, and its recommendation in pulmonary disease in *our volume*, he glances off at a tangent, to tell the public, in reference to COTTEREAU, how worthy that very agent is of a generous acceptance and a full and efficient trial! A more disingenuous critique perhaps never disgraced any scientific journal, especially of that of a profession that is so jealous of its honour, and so plumes itself on its high-bred sentiments of generosity and liberality.

When the cases of Dr. Hastings are taken, in conjunction with those of Cottereau, altogether, irrespective of what had been already advanced, the curative powers of chlorine, as a remedy in tubercular Consumption, seem tolerably conclusive, if not irresistible. Cottereau's cases, commencing in 1828, amount in all to thirteen in number, and have been published in the *Archives Générales de Médecine.* The 12th case, dated April, 1828, seems to be admit-

* Royal 8vo. London, 1826.

ted by every one to be important; and whatever scepticism might prevail with respect to the others, this is granted to be a very well defined case of genuine phthisis cured by chlorine. The individual afterwards enjoyed uninterrupted health; but subsequently fell a victim to fever cough, in consequence of night vigils from the illness of her infant; altogether, however, unaccompanied by any signs of a morbid affection of the lungs. A *post mortem* examination of the body decidedly proved the pre-existence of tubercular degeneration of the lungs, that had subsequently cicatrized and healed. Dr. James Johnson's remarks form a tolerably good commentary on the scepticism and slow assent of medical opinion. "The foregoing is certainly," says he, "a very strong case, if *all the particulars are candidly and honestly stated*, which, for the honour of science, we hope they are. But it is to be recollected, that tubercular cavities have been known to cicatrize under other modes of treatment, and even where no treatment was ascertained. The *post hoc ergo propter hoc* reflection, therefore, is recalled to our memory, independently of the unavoidable suspicions which attach to histories of the effects of new remedies."* This speaks volumes, and reads an admirable lesson to the public. Dr. Hastings's "remarks on the curability of Pulmonary Consumption," are based precisely on the same opinion, and though not expressed *totidem verbis*, are in reality kindred sentiments. If physicians fling the shade of suspicion on each other, *we* may well bear the ignominy. If *old* remedies have invariably proved abortive, wherein can success be found but in *new* remedies; and if they are introduced with recommendations founded on rational principles, medical gentlemen stand honourably committed to their adoption, especially if such come from the stores of chemical science which have already supplied all they possess.

Long before the names of Gannal and Cottereau were heard of in this country (even five years before the date of Cottereau's earliest case), this physician might have read our communication on the subject to the Philosophical Magazine (1823). Our recommendation of chlorine as curative in Pulmonary Consumption was brought forward many years before the question was ever agitated by any one, as far as the public are acquainted with the facts of

* Medico-Chirurgical Review, No. 29, July, 1831, p. 210.

the case. In the vapours of nitric and nitrous acid we stand alone, and no competitor has advanced any claim. Perhaps, however, at length, Cottereau will gain assent and approbation from the dictator in medical censorship which is denied to us as a *chemist*, however apparent and marked that priority may be. Whether the award of justice be withheld or not, the right is sacred and inalienable. Had providence adjudged our lot to be that of the medical profession, the curative triumphs of chlorine and vapour of nitrous acid would have been laid before the public in 1818; and ever since that period we have been incessant in our recommendation of it to medical gentlemen: its non-employment rests with them.

This work was originally, and is now again, in a much enlarged form, committed to the public with the best intentions, and with good wishes for the success of the treatment it recommends. We must be altogether, henceforth, excused from noticing any remark whatever that *medical journals* may deem it right to make. We have unfortunately found that their pulse beats with a hostility which we are conscious we do not merit, and which will eventually, at any rate, be found to do them no credit. Had we been an empiric and unlettered, the case would have assumed a different complexion. Perhaps when we shall have left the arena of time, justice may be done to our memory, however useless the tribute may be to the author. We leave the ungracious and ungrateful task for other studies, fraught with a happier aspect. Jenner's discovery was contested and ridiculed, and so was that of Harvey before him. Davy's Safety Lamp was disputed by George Stephenson; and Captain Manby's invention by Lieutenant Bell; and can we hope to escape censure, or pass unnoticed from "the strife of little tongues?"

Halifax, 12th September, 1831.

CHAPTER I.

INTRODUCTION—PULMONARY CONSUMPTION—PREDISPOSING CAUSES—HEREDITARY CONSUMPTION—SYMPTOMS—TUBERCLES, HYDATIDS, &c.—REMEDIES—VENESECTION.

The subject of Phthisis Pulmonalis is a most melancholy one, and there are few families in Great Britain whose history does not record one or more victims: a kind of universality, which belongs to no other class of diseases, is stamped on this destroyer of our species; nor are there any exempt from its attacks, for the vicissitude of the seasons may soon sow its germs in the healthiest frame. It mostly allows the individual who is already matured in years to "descend into the grave like a shock of corn fully ripe," while it reserves its ruthless attacks for the "little ones," and those who have entered on the theatre of life, adorned with all the garniture of promise, and unfolding pleasing images for futurity. These are the usually selected victims of this pitiless invader. Medicine has as yet made no successful stand against its visitations, and has been foiled in every attempt at rescue from the clutches of the grave. It has been well remarked by Dr. Johnson—"When Phthisis is regularly established, it forms one of the most distressing pictures which the human frame exhibits in its progress to corruption!

The hectic flush on the cheeks, the vermilion lips, the burning heat in the palms of the hands and soles of the feet, with evening fever, are periodically changed for cold colliquative sweats, hollow, pale, languid countenance, sharpening features, augmented expectoration, and progressive emaciation! Such is the series of heart-rending symptoms which are daily presented to the agonized friends, whose distress is heightened by the never-dying hopes which perpetually spring in the hectic breast! Whether it is that the delicate organization which predisposes to this destructive disease contributes to amiability of temper and sweetness of disposition is doubtful, but certain it is that the malady in question falls in general on the best as well as the loveliest part of creation."* The fairest flowers that decorate this "Valparaiso" are exotics which the vicissitudes of a variable clime will soon blight and destroy: they will not flourish except they be nursed with care and tenderness; for they are as delicate as they are "lovely in their lives." Can it be wondered, then, that the rude atmospheres and morbid media into which they are often (alas! reluctantly) dragged, should prove fatal to beings like these! "Oh! wonder no more." Were the curious, complex, and delicate machinery of life once studied or reflected on, it would prove an interdict to these sacrifices of the "first-lings of the flock," that fall

> "Thick as autumnal leaves that strew the brooks
> "In Val' ombrosa."

Consumption, like the vampire, while it drinks up the

* A Treatise on Derangements, &c. London, 1820. Third Edition, page 18.

vital stream, fans with its wing the hopes that flutter in the hectic breast; the transparent colours that flit on the features like those of the rainbow on the cloud, are equally evanescent, and leave its darkness more deeply shaded. They who are the kindliest and the best it selects for its victims, while it softens the temper to an angel tone, as if it would attenuate that delicate materialism to aerial being, in anticipation of the change it is so soon to assume. Dr. Beddoes observes, that "it is known to be almost invariably fatal, not one in many hundreds surviving." "To Consumption," he continues, "nearly one-fourth part of the deaths in the bills of mortality are to be referred. The disease is seen sometimes to perform an operation nearly the reverse of decimation, leaving alive one or two members only out of a large family."* This author mentions one case wherein he was called to the sole survivor of six brothers and sisters; and another individual, the last of his name,—the father, mother, two sisters, and brother, having in succession disappeared. We know cases of a somewhat similar complexion, and have been informed that a Reverend Gentleman, in the South of England, has followed to the grave, within these twenty-four years, no less than twenty-five individuals of one family, who have all died of Consumption: there are now two left alone. Nor is any rank exempted from its visitations: the two brothers of the present King of the French, namely, the Duke of Montpensier, and the Count of Beaujolais, both died of Consumption; the one at Twickenham, in 1807, and the other at Malta, in the following

* Essay on the Causes, &c. of Pulmonary Consumption. T. Beddoes, London. Second Edition, 1799, pp. 303 and 304.

year. Dr. Clark observes, " We have no reason to believe that the physicians of the present day are more successful than their predecessors were ten—nay, twenty centuries ago." He states further that a preventive of Consumption is all that can be expected, " because to cure it is what the present state of our knowledge, and the limited powers of our art, scarcely admit of our calculating upon, even in the most favourable cases." Tubercular Consumption, according to Laennec, is not above the means of cure; but as yet we have no power to do it. Avenbrugger exclaims,

" O quantum difficile est dignoscere morbus pulmonum!
" O quantò difficilius curare!"

" If," says Dr. Paris, " we turn to the pages of Etius or Celsus, and contrast their methods of treatment with those of the present times, we shall have no cause perhaps to boast of our superiority. It has been said that 55,000 persons die annually of Pulmonary Consumption in Great Britain; so that the disease may still merit the name of *Tabes Anglica*, which was commonly given to it on the Continent a century past."

The chief predisposing cause of Consumption is a neglected cold: coughs, peripneumonies, and other inflammatory disorders, are fertile sources of Phthisis: the causes, however, are many,—mental depression, and convalescence from acute diseases may take their places among the number. The seeds of pulmonary disease are even sometimes sown in the nursery that are to ripen into maturity in advancing years: improper diet, confined air, sedentary habits, over-heated apartments, and want of aerial exposure; transition from heat to cold, espe-

cially if the latter be humid; cold and damp feet; in fact, whatever induces *cold*, such as exposure to continued chills or cold currents, imperfect and unequal clothing. Dr. Beddoes says, "the common catarrh may lead to the 'churchyard' cough." In many instances the boarding-school is the field where pulmonary diseases spring up and rankle in the system: females are secluded there at the most precarious period of their lives, and when free and generous exercise is so essential to health. There are particular employments which more than others determine pulmonary disease:* thus tailors, stone-cutters, needle grinders, and those who play on wind instruments are especially liable to its attack. There is an interesting paper, by Dr. Knight of Sheffield, in the "North of England Medical and Surgical Journal," on that form of Consumption called the Grinders' Asthma, which carries off a surprising number of victims amongst the grinders of cutlery. According to this paper:—

"The articles which are ground in this neighbourhood are forks, awl blades, fire-irons, razors, scissors, pen-knives, table-knives, large pocket knives, files, joiners' tools, saws, sickles, and scythes. Some of these are ground on dry grind-stones, others on wet grind-stones; and there is a third class who grind both wet and dry: altogether they amount to about two thousand five hundred; of this number, about one hundred and fifty, viz., eight men and seventy boys, are fork grinders; these grind dry, and die from

* The Jockeys at Newmarket, and other race courses, "waste" themselves, to be reduced to the standard of weight prescribed: this is effected by being half buried in a dung heap! The injury inflicted on the constitution is terrible: it is an act of suicide: *they* may indeed not know what they are doing, but their masters *ought* to know better.

twenty-eight to thirty-two years of age. The razor grinders grind both wet and dry, and they die from forty to forty-five years of age. The table-knife grinders work on wet stones, and they live to betwixt forty and fifty years of age."

"So general has this destructive malady become of late years, that the result of some inquiries, made in 1822, showed that out of two thousand five hundred grinders, there were not thirty-five who had arrived at the age of fifty; and perhaps not double that number who had reached the age of forty-five: and out of more than eighty fork grinders, exclusive of boys, it was reported that there was not a single individual thirty-six years old!"

Dr. Knight then describes the different inventions which have been devised for preventing the diffusion of the metallic dust, and its entrance into the lungs of the operatives; all of which have either failed, or the grinders refuse to employ them.

It appears that Mr. I. H. Abraham invented a complicated *Chevaux de Frize* of Magnets, to attract the steel dust arising from the grindstone. This "Invention," through the personal interest of Mr. W. Tooke, received from the Society of Arts a medal and a pecuniary reward, and the cutlers of Sheffield presented him further with a hundred guineas. It appears, however, that all this has turned out to be *premature;* for, according to Dr. Knight, this so-called "Grinder's Safety Guard," and "Life-Preserving Apparatus," was never generally adopted by the dry grinders, nor even partially for more than five or six months: so that it remains precisely as it was. And even supposing not a particle of *steel* had escaped the attractive influence of the magnets, the "grit dust," which, according to Dr. K., is not only the *most copious*, but also the *most injurious* part of what

is inhaled by the grinders,* was wholly overlooked and unprovided for by these means. In truth, the oxidation of the magnets, and brushing away the steel which encrusted them, must have been a source of incessant annoyance and constant occupation. The ventilating process of Mr. John Elliott has proved, we believe, as equally inefficient as the Wet Sack-Cloth Screen of the former subsequently recommended, and the complex proposition of Thomason of Birmingham. We very much doubt the propriety of Dr. Knight's recommendation of having felons sentenced to this *lingering, yet certain death:* as it now remains, it is a *voluntary* act, similar to the doom to which those concerned in making white lead and red lead are exposed. The best plan we have ever witnessed was that proposed many years before the above-mentioned persons came forward with their respective plans, by Mr. Wm. Strutt, of Derby, whose ingenuity is well known and appreciated: it consisted of the stone revolving in a box and case, through which a complete and powerful current of air was continually passing: this appeared, to us at least, superior to all the plans and propositions we have enumerated, and it was anterior to them.

According to our views of the matter, and the attention we have given the subject, there is but one evident successful method of prevention: it is that of wearing an air-tight hood, to encase the head entirely and include the organs of respiration; the grinder, by means of a flexible hose attached to this hood, may, it is obvious, constantly breathe the purest air, for its extremity might dip into a

* North of England Medical and Surgical Journal, No. I.

canal through which purer air from without is constantly passing. A small pipe from its summit would allow the expired heated air to escape, and thick watch glasses serve as the medium of vision. The dry grinder might thus breathe *another atmosphere*, and it is palpable that he is completely secured from all injury; nor can we anticipate any objection to the immediate adoption of a measure so simple and evidently so effective. We addressed a letter on the subject to the "Sheffield Iris," but have not had an opportunity of ascertaining whether it was inserted or not. It is needless, however, to trace these sources and causes in minute detail, since the question is too ramified and complex, nor is it at all necessary.

The lungs should always be exercised with much caution: the only interview which ever took place between Bishop Berkeley and Malebranche affords an interesting illustration: this was in the year 1715. The conversation turned on the non-existence of matter: Malebranche, who laboured under an inflammation of the lungs, and whom Berkeley found preparing a medicine in his cell, and cooking it in a small pipkin, exerted his voice so violently in the heat of dispute, that he increased his disorder, which carried him off in a few days after.

Pulmonary catarrh is doubtless one of the most frequent of diseases: very few pass through the round of the annualseasons without an attack, more or less severe; yet though this is a common occurrence, there are few diseases less understood. It is generally so slight that the functions are not deranged, and the patient manages his usual concerns as before; indeed, what is termed a cold is esteemed a very trifling matter, and, though the basis of a train of appalling diseases, is too

often neglected till it fastens on the vitals, and its expulsion becomes at last a very serious affair with the medical practitioner; in some individuals, however, the attack is so violent as to threaten life. Pulmonary catarrh is an inflammation of the mucous membrane, that lines the bronchia; it is characterised by a redness, more or less intense, and especially by a certain thickening of the membrane. This inflammatory action is accompanied in its incipient stage by the secretion of mucus more abundant in quantity than happens in the natural state; the characters of this secretion vary in different periods of the disease: it is thin and transparent in the first instance, and a somewhat saline taste is felt by the patient. In process of time it thickens and becomes less diaphanous and more viscid; towards the termination of the disease it becomes completely opaque, and assumes a whitish, yellowish, or greyish colour.

We do not by any means consider consumption, strictly speaking, hereditary; for however susceptible the system may be to the action of those external agents that eventually give rise to that train of symptoms which ultimately merge in confirmed phthisis; still phthisis is not an integral part of the native constitution, "to grow with its growth, and strengthen with its strength." The susceptibility may depend on organization, as for instance on a peculiar structure of the skin, the cuticular surface being ill adapted for the functions of perspiration, and delicately sensible to the impressions of cold and damp; also, a malconformation of the thorax; in fact, what is generally termed a delicate constitution. Hippocrates says that this disease happens principally between the ages of eighteen and thirty-five: that there are instances both before and

after those periods of life is notorious; but the system within these limits is most susceptible, and requires a double guard; important changes may be considered as then taking place in the human constitution. As to parentage, the offspring of scrofulous and consumptive, dyspeptic, or gouty parents, will be born into the world with constitutions susceptible of those external agencies which conduct to confirmed Consumption: it is in this way only that Consumption can be said to be hereditary; and thus literally may the "sins of the fathers be visited on the third and fourth generation." Hence natal predisposition or disordered functions, or both conjoined, may determine the tubercular diathesis; but accidental and external causes give rise to Pulmonary Consumption.

In hereditary Consumption, understood with this limitation,* there is great serenity of mind, buoyant spirits, and flutterings of hope even over the last gleam of the lamp of life. It is a disease so insidious in this instance that sometimes the patient is conducted to the verge of the grave before the fatality is suspected; and, in fact, there is an extraordinary self-deception practised by the consumptive patient in always refusing to take the case home to himself. According to Dr. Beddoes, the previous signs of approaching Consumption are unusual lassitude, quickened respiration, depression after dinner, regular evening indisposition, with flying chills and flushes, frequency of pulse, increased by the slightest cause,

* Dr. Johnson does not "attribute *genuine phthisis*, or tubercular Consumption, to the *direct* influence of the climate." "I believe," says he, "the remote predisponent, or, as some term it, the hereditary cause, to be a scrofulous taint in the constitution, or nascent tubercles in the lungs."

which accelerates both circulation and respiration. Cold may give rise to tubercles, or advance their formation when they are already commenced; an incipient cold may be nothing to a healthy individual, but, to a consumptive one, mortal, or may induce that which by continued neglect shall hurry to the grave. Loss of flesh, colour, strength,—loss of the hair, &c. will alarm the most indifferent relative. To these symptoms may be added a dry cough, unaccompanied by free expectoration. It is stated that if the disease approaches insidiously on young people with "light hair, fair skin, blue eyes, florid complexion, contracted chest, and high shoulders, especially if any of their progenitors have fallen victims to the same malady, a cure will rarely be effected, though the progress of the disease may be protracted if regimen be attended to." "In such cases," continues an eminent medical practitioner, "the slightest determination to the lungs should excite our anxiety and claim our attention; for often when the cough is so trifling as to be only a slight heck, as if occasioned by mucus or phlegm in the throat, we shall find the circulation deranged and considerably accelerated after meals, especially of animal food. There will not be the same degree of ease in lying on one side as on the other;* and in females about the age of puberty, the catamenia (menses) will not come on. Hæmorrhage from the lungs, under such circumstances, is always suspicious; for although it often appears to be an effort of nature to relieve the local congestion, yet the ulcer which succeeds does not always heal, and too frequently terminates in confirmed phthisis. The wan-

* Dr. Parr asserts that if the patient can lie on the side where the pain is felt, the disease is *not* Phthisis.

dering pains and anomalous symptoms which so often accompany the incipient stage of pulmonary Consumption, are embarrassing to the practitioner, nor can any thing decisive be prognosticated from the expectoration; for pus does not appear till the disease is far advanced—too far, alas! for cure." This admission on the part of so able and accurate a writer as Dr. Johnson, shows the difficulty involved in the diagnosis of phthisis. "Pus sequitur sanguinem," though adopted as a maxim, does not always hold good, since both Richter and Bolzano have given examples of the contrary. An abscess in the lungs from pneumonia no doubt has been often mistaken for phthisis, and perhaps vaunted cures may have reference to cases of this kind, or others of a similar complexion.

Dr. Armstrong states that four affections may be mistaken for tubercular phthisis, even when they occur in their least complicated forms: these affections are chronic inflammation of the bronchia; ulceration in the trachea; chronic inflammation of the pleura; and, lastly, chronic and simple inflammation of some portion of the lungs. "According to my observation," says this eminent physician, "the true tubercular phthisis only occurs in habits of the strumous temperament; and yet it remains to be proved, whether tubercles be ever formed in the lungs without any tendency to them. Generally speaking, the strumous temperament appears under two modifications which require to be discriminated. The first of these is found in those who naturally have pale skins, loose flabby fibres, and a sluggish pulse; and the second in those who have ruddy complexions, firmer fibres, and a brisk circulation. Subjects of the first modification

have seldom much corporeal vigour or mental vivacity, whereas those of the second often possess both. But there is one thing common to these two modifications—an unusual irritability of the capillary arteries; an irritability which is perhaps one of the most essential peculiarities of the strumous temperament." He proceeds to say, that "the predisposition to genuine phthisis chiefly consists in an unusual irritability of the capillary arteries in the cellular connecting membrane of the lungs; and where this predisposition exists, any cause agitating or stimulating the lungs may lead to tubercles, and, of consequence, to phthisis."*

Dr. Hastings† has shown that inflammation is accompanied by an enlargement of the capillaries. It must be evident that any unnatural or morbid action of this kind will give rise to local inflammation, but it is more difficult to conceive how this long continued should finally merge in tubercles, and the difficulty consists in there being no glands in the cellular substance of the lungs, which are composed of a great number of vesicles, and traversed by a multitude of capillary vessels; there are, it is true, *glandular mucous folicles*, which may be said to amount to the same thing.

Dr. Baron, in his learned researches on Tubercular Diseases, regards tubercles as "small vesicular bodies, with fluid contents, that gradually pass through a process of inspissation till they become hard," and further, that "in constitutions predisposed to cachectic diseases, inflammation may be the means of calling tubercles into

* Practical Illustrations of the Scarlet Fever, &c. London, 1818. pp. 199, 200.

† On the inflammation of the mucous membrane of the lungs.

existence, either in the lungs or elsewhere." "But," continues this eminent physician, "although I admit this as a possible occurrence, I am very much inclined to believe it is not a common one; for the very existence of a predisposition to such disorders proves something wrong in our system, and may warrant the inference, that inflammation merely puts the latent disease into a fatal state of activity."

The existence of tubercles in the lungs is the cause, and constitutes the proper anatomical character, according to Laennec, of pulmonary phthisis. These are developed under the original forms of minute semi-transparent points of a greyish colour; sometimes, however, they are nearly colourless. Their size varies from a grain of millet to that of hempseed. These particles enlarge their mass, and become yellowish and opaque, commencing at the edge and proceeding to the centre. Those that are in contact, or nearly so, unite and coalesce, and then form masses variable in size, of a full yellow colour, opaque, and having a density somewhat analogous to that of compact cheese. About the period of the developement of tubercles, the pulmonary tissue, which was previously sound, begins to indurate, becomes greyish and semi-transparent around them by the production of new tuberculous matter, which is semi-transparent in the first instance, and pervades their substance.

Sometimes even tubercular masses of considerable volume are the consequence of a similar impregnation, without the previous characteristics of tubercles in their earliest stage. The pulmonary tissue thus pervaded is dense, humid, and impervious to air, and when cut, the section presents a polished and close surface. In proportion as

these indurations pass into the state of more mature tubercles, we perceive a number of very minute yellow and opaque points developed, which at length, increasing and multiplying, terminate by invading the whole of the indurated portion. In whatever way the tubercles are formed, they sooner or later end in becoming soft, and somewhat liquid, and finally suppurate. This softening commences towards the centre of each mass, which becomes more and more soft and humid, until the entire mass is pervaded. In this case, two different forms are presented: sometimes it resembles thick pus, but without smell, and more yellow than the tubercles; at other times it separates into two parts, one of which is very liquid and more or less transparent or colourless, at least if unmixed with blood; the other is opaque, friable, and of a curdy consistency; sometimes it resembles whey with caseous matter floating in it.

Under the section "Productions accidentelles développées dans les poumons," M. Laennec has considered them under six distinct forms: I. Cysts properly so termed. II. Cysts containing vesicular worms. III. Fibrous or cartilaginous substance, or oseous or oseo-cretaceous matter. IV. Tubercles. V. A cancerous substance called *matière cérébriforme.* And VI. A formation which he terms *mélanose;* which last may obtain in four distinct forms—*a*, masses enclosed in cysts; *b*, masses independent of cysts; *c*, under the form of matter infiltered through the organic tissue; and *d*, under that of matter deposited on the organic surface.

Vesicular worms found in the lungs belong to that class to which Laennec gives the name of *acéphalocystes:* a term which is tolerably expressive. These were called *hydatids* by former observers, and had long been con-

founded with cysts, being presented under the form of a simple vesicle of variable volume, soft, and having somewhat the appearance of the albumen of an egg, half cooked, or *set*, as it is usually called, and possessed of an ovoid or spheroidal form. These membranes are diaphanous or semi-transparent, colourless or milky, sometimes a little tinged with red, yellowish, greenish, or greyish. The cavity of these vesicles includes a liquid variable in quantity; for the most part, serous and limpid, occasionally muddy, and stained yellowish or reddish. Sometimes a large one includes many smaller ones; while at other times minute ones are found still adhering either to the external or internal surface of the parent, and fall off when they have attained a sufficient size. Besides these phenomena, hydatids possess no distinct organ, and present the type of animal being in its simplest imaginable form—the *termo monas* of animal life. Rudolphi, from a consideration of the circumstances, has altogether denied them a place in the scale of life: though Percy has seen hydatids of this kind *move*, and Laennec also states that he has observed the reproduction of hydatids in every stage, such as is found to be the case with some polypes. These are always inclosed in cysts, which insulate them from the surrounding parts; the cysts are usually fibrous, but often vary. Hydatids float in the liquid contained in the cysts, which is sometimes limpid and at other times opaque or muddy, and when there is only one enclosure, it occasionally fills the entire cyst, and abuts on the membrane. These hydatids may be developed in almost all the organs of the human body, and are often met with in the lungs. They are described with particularity by Johnson, Collet, Mallöet, and others.

From what has been already noticed, it is evident that the diagnosis of true tubercular Phthisis is not by any means so clear and palpable as could be wished; and the Stethoscope of Laennec, conjoined with the chemical character of the expectorated matter of the lungs, seem to hold out the only methods of correct discrimination. The Stethoscope affords the least equivocal means of discriminating diseases in the chest, as in inflammatory affections of the lungs and pleura, &c.; for it not only indicates the seat of disease, but its amount, and progress, as well as the change effected by the curative means employed. It requires continued practice, however, to be able to compete in its use with a Laennec, a Forbes, or a Williams. The modifications of sound can thus only be accurately ascertained.

The most important aid which medicine has received in these latter times from the Arts, is doubtless the Stethoscope, the noble invention of Laennec, now no more. It is a legacy, however, which will embalm his memory, and transmit it with gratitude to a distant age. Dr. Yeats does not consider that this invaluable discovery is entitled to the praises bestowed on it. We are surprised at such an expression of opinion. Hume, for whom we are no advocate, and whose sentiments and opinions generally we hold in the utmost abhorrence, says, that all our knowledge is gained from *experience:* this being the case, we cannot think that Dr. Y. has had this species of evidence; for all who have enjoyed it, with united voice, give, without a solitary dissentient, their suffrages in its favour, and we are confident that its principles are based on the solid ground of science.* We consider the relation of the

* Nine years ago, if we mistake not, an instrument called a *Plex-*

Stethoscope in the diagnosis of the diseases of the lungs and pleura precisely what the *sound* is in reference to calculi in the bladder. "The principle on which it is founded," says Dr. Gregory, "is simply this, that the passage of the air through the lungs, during the natural actions of respiration or speaking, gives rise to certain sounds or phenomena which are communicated through the parietes of the thorax, and are audible on the application of the ear. As these phenomena take place during the movements communicated to the parts contained within the chest, and as they are generally referable to the known mechanical laws of acoustics, they are considered to indicate, with more or less certainty, the physical condition of these parts in the state of disease, and have therefore been called physical signs, to distinguish them from the more variable and equivocal symptoms of the lesions of these organs drawn from disordered functions, uneasy sensations, or changes of sensible qualities." Ten years have now rolled away since this ingenious and admirable invention was first promulgated to the world. Experience has stamped on it the seal of importance; and the proofs of its excellence stand out in bold relief before the medical world. Its principles are founded on the laws of acoustics, and it has stood the scrutiny of the most rigorous induction, while frequent post-mortem examinations have corroborated, in a remarkable manner, the indications that it had previously announced. We consider it an essential as well as an

imeter was said to have been invented by a French surgeon, for discovering an effusion in the chest or abdomen; or whether the liver or spleen were enlarged, or the peritoneum contained any air. It consisted of a plate of ivory laid on the spot, &c.

important instrument in diseases of the chest, though we much fear it is one greatly neglected by the provincial practitioner. It does require practice to be able to become a master in nice and delicate discrimination; but it is attained more readily and much sooner than the medical practitioner is generally apt to suppose. Sir Charles Scudamore had ample opportunities to verify the importance and truth of the indications of this instrument, under the immediate direction of M. Laennec, in the Hôspital de la Charité, at Paris, and has incontestably proved its utility.

The name given to this instrument is sufficiently emphatic; nor does it seem to belie its high title, Stethoscope being derived from two Greek words, στηθος, *the breast*, and σκοπεω, *I see;* as if we, by its means, had a peep into its chambers, and saw what was doing there. This important application of scientific principles is termed *auscultation*, and the modification of sounds returned, *pectoriloquism*, *crepitating or gurgling*, *rattles*, *metallic or amphoric resonance*, *&c.*, all of which are described in the "Traité de l' Auscultation Mediatè" of M. Laennec, of which work Dr. Forbes of Penzance has given us an excellent translation. The instrument itself is extremely simple, and has been employed of different sizes. The species of wood of which it should be constructed is of much importance: it is essential that it should be a good conductor of sound, and cedar-wood is of this description. It should also be light, to be carried in the pocket, and for this purpose may be divided in the middle, the junction being made by a metallic pipe in the centre. An ear-piece of ivory or horn terminates the instrument, at the extremity to

which the ear is applied. The scratch of a pin at one end of a log of wood, heard distinctly by the ear applied to the other; and the discovery of a leak on shipboard, by the application of a stick to different parts of the deck, the precise situation of which is thus easily detected by the ear; or, the approach of distant cavalry being determined by the ear applied to the ground, will afford simple illustrations of the principles of the Stethoscope. By this instrument we, therefore, attain an accurate knowledge of the peculiar vibrations on the parietes of the chest, from the entrance of the air into the bronchia. One important advantage arising from the use of the instrument, is the detection of the specific spot or part of the lungs where the disease is located, or its changes, or shiftings, or ramifications, and comparative intensity; thus local treatment, as by a counter-irritant, may be correctly guided. This stamps the instrument with an importance which is truly sterling. Where all is dark within, this monitor speaks truly in oracular responses from its sanctuary and concealment, and, like the ear of Dionysius, we are informed, by its means, of the conspiracies that are forming against the vital principle: for it is a faithful echo of the mysterious workings of the mystic cavern, and its information may be confided in: no other mode of interrogation is fraught with a certainty like this; nor is its information confined to changes of structure in the lungs, but its communication embraces also the diseases of the heart. It requires tact in its use; but what species of knowledge is to be obtained without practice or application? There is no royal road to science, and an acquisition like this is surely worth contending for. It is an imperial adjunct to the

"art and mystery" of medicine; and we should be inclined to put little faith in the opinion of any medical man, on the diseases of the lungs and pleura, or the changed phenomena of the heart, who would discard the Stethoscope from his practice, or, from ignorance, set it at nought. Its principles are sound and scientific; and the man who undervalues its information may be deservedly stamped with the brand of ignorance and folly. We do not blush to acknowledge that our opinion, in reference to it, is in perfect harmony with that of M. Andral, that it is indeed "l'une des plus belles et desplus ingénieuses découvertes qui aient été faites en médecine depuis longtemps." Its author, who fell a victim to the very disease he had endeavoured to substantiate in a more clear and unequivocal manner than had ever been done before, now mingles with his kindred elements. This is generally the fate of the good and great; and all that we can now do is, while we erect the tribute of gratitude to his memory by its general employment, to REMEMBER LAENNEC.

"To such persons," says Dr. Forbes, when speaking of *mediate auscultation and percussion*, "as admit their authority, they carry with them the conviction of physical demonstration; and it is impossible not to yield, to opinions formed on such a basis, assent of a very different kind from that which follows the contemplation of a mere sympathetic symptom. We may deem lightly of a quick pulse, or a hurried respiration, or an acute pain, because we know that all these may accompany an affection of the most temporary kind, and of no danger; but when we know that the fleshy sound, or absence of respiration, over one side of the chest, can only arise from a great organic change, it is impossible that we can regard such

a sign but as one of the highest consequence, and as worthy to determine our prognosis, and direct our practice." In the Medico-Chirurgical Review, for July, 1826, we have a case of *empyema*, discovered by the Stethoscope, by Mr. Jowett, a Surgeon of Nottingham. The report returned by the instrument was, "Right cavity of the thorax filled with fluid which compresses the lungs." From this important verdict an operation was determined on: three pints of fluid were drawn off, and the patient recovered. Even twins in the womb have been discovered by the Stethoscope.

There is a most able and valuable article in the Edinburgh Medical and Surgical Journal,* by Dr. Gregory, on "the Diagnosis of the Diseases of the Lungs and Pleura," which is worthy of much attention from the medical practitioner. It is here observed, "The question, therefore, as to the general adoption of auscultation and percussion, in the investigation of diseases of the chest, must now be decided, I conceive, by the amount of *practical advantage* that can be shewn to result from the minute and accurate information which they undoubtedly afford." "My object is to shew, not that by this mode of investigation we can infer the existence of the diseases of the lungs and pleura *sooner;* but that by means of the ordinary symptoms, and the physical signs, conjointly, we are enabled to recognise and distinguish them *better;* and to ascertain with greater precision the various forms which they assume, the stages through which they pass, and the physical changes which they induce." "By the different characters which they present, we are

* July 1, 1830, p. 24, et sequent.

enabled to form a judgment of the precise nature and seat of the morbid action; by the extent of surface on one or both sides of the chest, over which they are audible, we are enabled to measure pretty accurately the extent, and, consequently, in many cases, the severity and danger of the disease." "In the great majority of cases they enable us sooner or later to determine, with much more precision than we can ever hope to arrive at without their aid, the existence, the seat, the extent, and the progress of tubercular disorganization and ulceration in the lungs." "We may be justified in coming to the general conclusion that auscultation and percussion do furnish some practically important diagnostic signs by which the prognosis is materially influenced, both in genuine phthisis pulmonalis, and in those affections of the lungs which resemble phthisis so closely in their general symptoms and characters, that the ordinary mode of investigation is frequently quite inadequate to distinguish them from this fatal disease." An important remark has lately been made by Dr. Duncan, in his Clinical Lectures in Medicine, in the University of Edinburgh, in relation to the *early* detection of *pectoriloquy*, the diagnostic mark of *phthisis*. "When this," he states, "was first observed, the cavity must have been extremely small, and the occurrence consequently shewed what an important auxiliary the Stethoscope might be occasionally found by a scientific practitioner; for when pectoriloquy was first heard here, no peculiar or pathognomic general symptom of that disease was present, by which its existence could be ascertained, or even inferred." These respectable authorities, which might be considerably extended, were it at all necessary, prove the essential importance of this

invaluable instrument, in the extended use of which we are so anxious. It must be confessed that not a little obscurity still hangs over pulmonary diseases, and even the best physicians are often puzzled and perplexed; all means, therefore, that have a tendency to discriminate and elucidate, should be employed. "Medicus si suffecerit ad cognoscendum, sufficiet ad curandum, prima namque remediarum inventio est cognitio morbi."*

The most common seat of the cavities are the superior lobes of the lungs, and it is here that tubercles usually form in the first instance. On this account the peculiar sound heard by applying the Stethoscope to that part of the breast which immediately covers the spot is called *pectoriloquism*, and is of a double character, either doubtful or evident.

Sir Richard Blackmore divided Pulmonary Consumption into two classes:—that which was intimately connected with the vital stamina, or constitutional organization; and the secondary, as excited by perineumonies, malignant fevers, &c. Dr. Clark gives us the following corollaries as expressive of his opinion:—

I. Tubercles in the lungs are essential to and the immediate cause of Consumption.

II. Tubercles originate in a morbid condition of the general system.

III. The cause of Consumption originates either in a hereditary predisposition, or in functional disorders, or from these conjoined effects.

It must not, however, be forgotten, that there is another type of Phthisis, called *pituitous*, equally fatal, and perhaps more common on the continent than in this coun-

* Galen.

try. Camper, the distinguished anatomist, was the first, we believe, to shew that there was such a thing as Consumption without ulceration of the lungs. Hence it is found that individuals may die of Phthisis, accompanied with hectic fever, without expectorating throughout the progress of the disease any thing but mucus. According to the learned researches of Dr. Bolzano, pituitous Phthisis occurs most frequently in women, and tubercular Phthisis in men. When intermittent fevers terminate in Consumption, it generally assumes the pituitous type, and though hæmoptysis generally ends in tubercular Consumption, it sometimes merges in pituitous Phthisis. Bolzano observes that the cough in the pituitous form of Phthisis is liable to considerable variations, being sometimes extremely troublesome, but afterwards almost entirely subsides; while it is the reverse in other kinds of Consumption. In the former it is less violent, and more frequently deficient than in the latter. In pituitous Consumption the expectoration is more copious than what takes place in purulent matter expectorated in tubercular Phthisis. One of the best means of diagnosis is the following: when the expectoration seldom undergoes many changes in appearance, it may be inferred that the lungs are ulcerated. In tubercular Consumption the lungs are ulcerated, while in pituitous Consumption the lungs may present a healthy appearance. Still, however, pituitous consumption* may terminate in tubercular Phthisis, and in the former death may supervene without the patient

* Pituitary Phthisis is the *Chronic Bronchitis* of authors, in *some measure* resembling tubercular Phthisis, but the *nitrous acid vapour, &c.* does not appear to me to be *applicable* in this case, and I should doubt its efficacy.

having expectorated any thing but mucus from first to last.

The expectorated matter in pulmonary Consumption has long engaged the attention of medical art. Dr. Armstrong has given a sketch of two remarkable fibrous substances expectorated by one of his patients, perhaps belonging to the third division of Laennec's "Productions accidentalles." "Je regarde les vomiques," says M. Laennec,* "telles que les connaissent les practiciens et que je viens de les décrire, comme le produit du ramollissement d'une masse tuberculeuse d'un grand volume. L'abondante expectoration qui a lieu ordinairement pendant quelques jours à la suite de leur rupture ne peut pas être regardée comme formée uniquement par la matière tuberculeuse contenue dans l'excavation."

The great object in tubercular Consumption, according to Dr. Clark, should be an endeavour to retard the progress of tubercles towards softening and suppuration, and to prevent any further increase. Tubercles, according to him, may exist many years in the lungs without any marked derangement; and if the causes that irritate and inflame be removed, may not materially shorten the life of the individual. Generally, however, they are little influenced by remedies, though medicines may promote the expectoration of softened tuberculous matter.

Remedial measures have been adopted under various forms, in order to resist this dread assailant on the constitution of the British. Alleviation of symptoms has been produced, and the life of the individual been pro-

* "De L'auscultation médiate," 2 Tomes, Paris, 1819. Vol. I. p. 116.

longed, or the passage to the grave softened and made more easy: and though cures have been boasted of, it is almost universally admitted, by the most eminent physicians, that those cases are of a very doubtful character, and it is very questionable whether a case of Pulmonary Consumption has yet been cured.*

Among the means of cure adopted, change of clime has been most relied on, but it is generally that of a forlorn hope: when medicine can do no more, the individual is expatriated, and dies in a foreign land. Dr. Clark says, that a residence in a warm climate may prove beneficial in various forms and stages of tubercular Consumption; but that confirmed Consumption, in a far advanced stage, accompanied by hectic fever, &c. can reap no good from change of clime, but contrariwise, the fate of the patient may be accelerated; and climate to be effective must be long continued.† This is a tolerably faithful report and summary of what may be expected from change of climate, and it is obvious that this resource can only be had recourse to in very few of the numbers that fall under pulmonary disease.

It has been stated that pure air and an elevated situation are unfavourable, and that those who live in marshy or fenny countries are not so liable to the attacks of pulmonary Consumption, while the exemption has been ascribed to the efficacy of the *hydrogen*, which emanates from stagnant water. It was on this supposition that Dr. Wells recommended the Phthisical invalid to escape to

* Indeed, all cases must have been doubtful up to the moment of death before the introduction of AUSCULTATION. *Now*, however, a decisive diagnosis may be obtained.

† Dr. Hastings thinks they may as well stay at home.

the fenny districts of Essex, Lincoln, &c., as to a city of refuge from the destroyer. It has indeed been asserted that an attack of ague under such circumstances has suspended Phthisis; and that since intermittents have disappeared by the drainage of the fens, pulmonary Consumption has increased. We happen to know, however, personally, an individual of constitutionally predisposed Phthisical habits, the only survivor of a considerable family, victims to Consumption, from the swamps of Lincolnshire. The marshy country is now at length abandoned, and it is suspected that Consumption is even there more general than elsewhere. In a subsequent chapter will be found a case stated to us to have been cured by an atmosphere impregnated with hydrogene. The symptoms detailed, however, did not warrant us to believe that it was a case of genuine Phthisis.

The comparatively greater rarity of Consumption on the Continent has been attributed to the greater prevalence of hœmorrhoidal discharges, and it is thus inferred that piles, when moderate, are actually salutary and preventive of Phthisis; it has consequently been proposed to determine them artificially by aloetic, &c. medicines, or the application of leeches. We suppose it is tolerably well ascertained that irregularity in the menses, or their suppression, may determine Phthisis, and that on this obstruction being removed the predisposition to Consumption has ceased.

We need scarcely enumerate the multiplicity of remedies and various medicines employed in this complaint, as all have disappeared like "wave succeeding wave." Some of these have been of a very extraordinary kind, such as viper's broth, and snails,—live frogs also have

been allowed to hop down the throat. Salvadori's method of cure seems to have attracted greater attention than it deserves. It excited a host of opponents, who seemed to be of a very pugnacious character: he directed his patients to climb an eminence quickly till they were out of breath and bathed in sweat, and then increase the perspiration, before a large fire and change their clothes; they were also to live on meat and wine. Gregory prescribed Spanish liquorice in the form of pills. Hoffman wrote a volume on the virtues of asses' milk, and even riding on this animal has been supposed curative. The cow-shed has also been recommended as a proper place of repose for the Consumptive. The effluvia of a tan-yard has been lately recommended; and it is stated that *Butchers* are less liable to pulmonary Consumption than others. Indeed, ingenuity has been severely tasked for remedial means and measures. The vapour of tar and Prussic acid have all been tried—in vain.

It appears that the milk of the ass or goat was prescribed in Greece and Arabia; not that it was at all superior to the milk of the cow, but because it was more plentiful. Inhalation of the vapours of heated pitch and tar was once a favourite remedy in bronchial defluctions; and the vapour of burning pitch was recommended in tubercular Phthisis. When common tar in vapour is used, Dr. Paris recommends the addition of a little subcarbonate of Potassa, to neutralize the pyrolignous acid. The tar is to be kept boiling in the room night and day, and on Dr. Crichton's good opinion of its efficacy, Dr. Paris considers that it may prove beneficial in that form of Phthisis which he has termed catarrhal: this must, however, be abandoned in cases of spitting of blood. The ancients

certainly had a high opinion of its medicinal powers: Ralph Williams* gives us a receipt for braying live swallows, and making cock broth, to cure consumption. Dr. Mundy says (Harl. MS.), he "knew a man in a desperate Consumption who took a great fancy for chocolate, and his wife from complaisance drank it often with him; the consequence was, that the husband recovered, and the wife had three sons at a birth." Sydenham used to recommend horse exercise: Dr. Baynard recovered of Consumption by constantly riding in the open air. In the old materia medica, the flesh of vipers roasted or boiled was held almost a sovereign remedy for Consumption. Dr. Charles Leigh says, "a wine from their flesh is singular in consumptive, leprous, and scorbutic cases: they also afford a volatile salt, the most generous cordial in nature." These, as well as the "celestial bed," custards with snails, and being buried in the earth up to the neck, have all had their day, and their lease is expired.

Digitalis, or forglove, has been employed by Drs. Ferrier, Drake, Fowler, Kinglake, Beddoes, and others, but with questionable success; for the cases quoted by Dr. Beddoes, &c. do not distinctly appear to be tubercular Consumption, and may have been abscesses in the lungs proceeding from pneumonia. Bleeding and digitalis, we believe, however, are among the more general remedies employed, though altogether of a most questionable character. Dr. Fothergill's recommendation, as a forlorn hope, was "country air with rest, asses' milk, and riding daily." Preventives are, a warm invariable temperature, as an atmospheric medium (say about 60 F.),

* Physical Rarities, 1651.

and proper dress, to keep up a temperate and genial glow of warmth: the feet must be kept warm; but while the dress is of flannel, and a sufficient defence against sudden transitions of temperature, it should not be such as to enfeeble the patient by too copious perspiration, as this might interfere with the cutaneous discharge.

We may sum up the safeguards of the constitution *versus* pulmonary attacks by a brief summary of the measures of precaution: these are, early rising, free perspiration, a pure atmosphere, an agreeable temperature, light food and of easy digestion, gentle exercise, warm clothing to prevent the effects of sudden alternations of temperature and condensation of perspiration on the skin: these will generally prove completely effectual.

We believe Dr. Baron has exhibited with advantage minute doses of Ipecacuanha sufficient to excite nausea, &c. in the early stages of Phthisis; and Dr. Johnson states that, "in the advanced stages, opiates, judiciously managed, may *soothe* the sufferings of those whom we vainly endeavour to save from the ravages of this insatiable disease. The superacetate of lead, also, when joined with an opiate, restrains, in a very powerful manner, the morning perspiration, which wastes and harasses the patient." "In ulterior stages a more generous diet and even some wine may be allowed. These, instead of increasing the fever and expectoration, will often check both." "Tell us, ye who best can tell," can this be compatible with bleeding? The compound powder of Ipecacuanha at night will often restrain, it is added, the morning perspiration, if given in doses of 12 or 15 grains. The sulphuric acid will also do good. It may be remarked that, in all probability, *nitric acid* would do as

well, and *if pure*, i. e. test nitric acid, the teeth will not be affected, but their enamel will be destroyed by the sulphuric acid generally existing in the nitric acid of commerce, which also contains *lead*.

Among the means of cure, warm baths have been resorted to. Patients in the Vallais, according to Dr. Tissot, pass the greater part of their time in the water. At Baden, Dr. Marcard has seen invalids sit four or five hours in the bath. Six hours at a time, in the warm baths in Silesia, are deemed sufficient, and the patients sit up to their chin.

Passing by vegetable diet, milk, discharge by issues, artificial ulcers, *et hoc genus omne*, we may close our remarks on remedies; and as their efficacy may well be questioned, we have been contented with a mere glance at the useless array. The most recent plans and proposals we have heard of are those of Dr. Myddleton, of Exeter, who employs mixed powders in a box, the chief ingredient of which we understood to be *hemlock*: a circular brush, having a rotatory motion, as in the blooming of cucumbers, &c., by turning a winch, volatilizes, or temporarily suspends these powders in the atmosphere; this is done with a view to *encrust* the lungs. Dr. J. Hancock recommends the use of Peruvian Bark diffused through the air, and thus brought in contact with the lungs in the act of respiration.

As Dr. Stewart's method of treating pulmonary Consumption was once in vogue, and attracted particular attention some few years ago, a few particular and specific remarks may not be uninteresting, as descriptive of his mode of grappling with the formidable assailant. He overlooks the idea of inflammation, except in the incipient stage of

the disease, and expresses an opinion that what is sometimes called an *inflammatory state of the lungs* is not really so, or at any rate that it yields more readily to a mode of treatment the very reverse of that generally used. He is averse to lower the system by reducing its strength, contending, and with much reason, that in so doing it superinduces in the same ratio the most painful nervous irritability, which at length counteracts the very end in view, by exposing the patient to a perpetual fever, from causes the most trifling, and, by relaxing that which is already too much relaxed, makes the constitution more delicate and more susceptible, and thus puts it out of the power of the medical practitioner in a variable climate like ours to prevent the frequent and dangerous occurrence of some new counteracting irritation. As diet, Dr. Stewart recommends a trial of "milk and vegetables, an egg, or a little animal food, beef tea, broths, particularly veal broth, jellies, and arrow root; as a beverage, water, either pure, slightly acidulated with sulphuric acid, or with a *tinge* of port wine; occasionally spruce or ginger or small beer." This dietetic treatment must be accompanied with as much exercise as can be endured without fatigue on a spring deal within doors, or a carriage without. A blister issue is to be applied to the chest, and the body sponged with vinegar and water, tepid in the first instance, and afterwards cold. The medicines are few and simple:—a cupful of cold infusion of bark with a few drops of sulphuric acid twice a day; steel, with bitters and Plummer's pills. It will be seen by all this that Dr. Stewart's mode of treatment is at complete antipodes with the reducing system. The system must be sustained to resist the shock. A generous diet of easily

digested food in moderate quantity can do no harm, but must do good. The leech or the lancet must be sparingly employed, if at all, rare at any rate, and in cases far between; the relief that is purchased is at the expence of the *vis vitæ*, and is after all transient and temporary.

Dr. Cottereau, a French physician, has invented an apparatus for conveying the vapour of chloride of lime into the lungs, acting as a kind of inhaler. The well-known effect of chlorides on morbidly affected parts, as had been proved by Delabarraque, and the expectoration of the tubercles detached by its influence in certain recent experiments, promise some interesting results in this disease. The committees of the Royal Academies of Sciences and of Medicine have made a favourable report.

Gannal's little work on the Inhalation of Chlorine in Pulmonary Disease, as translated by Potter, has been before the public. The priority of having suggested this, as remedial in Phthisis, must be conceded to us. Ever since 1818, we have constantly endeavoured to press its importance on those medical gentlemen which opportunity has from time to time afforded us the means of doing. Long before the earliest date he claims as his publicity, our recommendation was announced through several public journals; and without at all questioning the possibility of contemporaneous views, this priority must decide the case. The intercourse between the Continent and Great Britain had been many years before free and unrestrained: we do not forget the priority claimed by the French of the use of the seeds of the *Iris Pseudacorus*, as coffee, when it had some years before been recorded by Mr. Shrimshire, an eminent Surgeon of Wisbeach; and when we had taken

this "coffee," at his house, certainly more than a year before the claim was set up. However, the evidence on our part, at any rate, is full and conclusive.

A little volume on Consumption has appeared from an individual of the name of Humphries; but as his mode of procedure and process are *au secret*, we fear he is justly amenable to the charge of empiricism, on the part of the profession to which he belongs, and who will not be satisfied with a *mere guide book*, or directory, to his lodgings, where the canopy may be expanded, and the patient may inhale the virtues of the medicated vapours which he has there prepared.

Dr. James Murray has written a work, rather miscellaneous in its contents, yet sufficiently interesting: one of the objects embraced is the recommendation of *Iodine*, diffused through warm aqueous vapour, into the atmosphere of the room. Dr. Hastings, whose opinion is always entitled to respect, says, "I have, myself, used the Iodine inhalation, in two cases, where the manifestation of tuberculous degeneration was pretty evident; but I am grieved to say, that my patients were not benefitted by its use; indeed, one of them was certainly made worse by it, as the cough and difficulty of breathing were exasperated after each employment of it." The patient was directed to employ *Read's Inhaler*.

The most extraordinary work, however, is one entitled "Cases Illustrative of the Efficacy of various Medicines, administered by Inhalation in Pulmonary Consumption, &c.," by Sir Charles Scudamore, M. D., F. R. S., &c. This production has been by medical editors subjected to the severest reproof and castigation; nor can this be wondered at: how can the medical profession lift up their

voice and testimony against quacks and empiricism, when one of their own body, a Knight and a physician, practises its *alchemy*, and makes it an occult science. The London Medical Gazette, of the 4th of December last (p. 295), says, "that it is written *ad captandum*, and is the fac simile of, or sequel to, Harley-Street, a kind of finger-post to Sir Charles's residence, in Wimpole-Street, where it seems the inhalation is going on, and the apparatus may be had. There is, also, a counter-irritant, like Long's. Sir C.'s lotion is, 1 vinegar, 1 *eau de cologne*, and 2 water. Iodine seems *one* of the ingredients in his inhaling system, the rest is *secret*. Dr. Murray, of Belfast, as well as the Knight, recommended Iodine: the former, to be diffused through warm aqueous vapour into the atmosphere of the room; the latter, to be inhaled through a *tubular glass apparatus*." It is admitted, however, that the *formula* of the remedies has been omitted, lest patients might rush on destruction by an attempt to cure themselves!! "The inhaling apparatus," continues the editor, "may, for ought we know, resemble the 'cabinet pianos' of St. John Long."

Dr. Hastings has not suffered Sir Charles Scudamore to escape; and no one who is jealous for the honour of the medical profession must feel otherwise. "Out of the sixteen cases," says Dr. H., "related by Sir Charles Scudamore, four were fatal from tuberculous degeneration of the lungs. Of the successful cases, it appears to me that the bronchial membrane in most of them may be supposed to have been the principal seat of the disease; and there is nothing extraordinary in such cases recover-

ing under the use of the remedies that have been long had recourse to in this species of disease. But I cannot help expressing my astonishment that a knight and a physician of eminence, who supposes he has made important discoveries in the mode of treating a very intractable class of diseases, should not have been *very* particular in giving a full and precise description of the manner of applying the remedies. Concealment, in such circumstances, is not calculated to produce a favourable impression of the author, who thus cannot fail to call upon himself the criticisms of his professional brethren. By this omission, Sir Charles Scudamore has run a risk not very favourable to his medical reputation; for in consequence of it some persons may be induced to regard his work rather as a species of direction for the reader to his residence in Wimpole-street, than as a praiseworthy offering upon the sacred altar of medical science."

We would entirely *reject all inhaling apparatus whatever*, in the employment of which we can see only risk, uncertainty, and danger. A moment's reflection must convince any one that the safest, most convenient, and best method consists in impregnating the ordinary medium of respiration.

The question of venesection or blood-letting in pulmonary Consumption is a most important one, and it has always appeared to us that copious bleeding here, or even bleeding at all, is an act which would require a process of reasoning very different to any thing of the kind we have yet met with. The system is gradually sinking under the disease, the animal strength is on the decline,

and the last prop is taken away, so that, by any remedial means employed, the chance to rally again is removed: the patient is bled and bled again, and as if this were not enough, digitalis and setons* are employed to lay waste the little strength that remains. Consumption being confessedly a disease of debility, bleeding must prove generally injurious; for even in what has been termed "the gallopping Consumption," from the rapidity of its progress, the deceptive florid bloom conceals much debility and considerable irritability. A very curious fact has recently been communicated to the Westminster Medical Society:—a blister was applied to the chest, and an ounce of crude mercury exhibited *internally*. Some hours afterwards the surface of the skin, on the removal of the blister, was covered over with a multitude of minute *globules of metallic mercury*. This, in *our* opinion, promises most important results. We had previously known that, in the internal exhibition of calomel, &c., the external application of sulphur was sufficient to tinge the skin brown or black: still the former is connected with another train of phenomena, and we hope will not be lost sight of in diseases of extreme peril: connected with local affections, the influence of powerful remedies taken into the stomach may thus, it is evident, be drawn through the seat of disease, by the topical application of a blister to that region. We dare not venture to give vent to the full expression of our feelings on venesection, and very

* If counter-irritation is wanted, this is not, surely, the proper means. Far be it from us to question the propriety of counter-irritation: we think it eminently desirable; but tartarized antimony, &c. is the only rational mode of obtaining this salutary purpose.—The *blister*, not the seton.

much question whether this practice alone has not dismissed thousands to their graves, while a temporary relief is surely dearly purchased by the seal of certain death. The loss of power and sensibility is proportional to the loss of blood, and the efficiency of medicines on the system is in that precise ratio diminished; so that we not only deprive the system of the means to rally again, but, at the same time, take from remedial measures all their efficacy. What is to be expected if we drain the system of its strength, and, at the same time, render medicines inert and nugatory? It soothes and softens the passage to the grave, as a physician once told us, and is therefore done that the patient "may die easily," for by lowering the strength the last struggle will not be so obstinate! Bleeding has been employed, it may be, to lessen the tendency to inflammation; but it may be reasonably asked, does it do so? and cannot the same end be accomplished by other means? As venesection may be used to diminish inflammation already determined, we very much doubt whether copious bleeding would not rather, by revulsion, increase local inflammatory action. An eminent physician once informed us he had distinctly recognised several cases of apoplexy which followed depletion, and we think that this is not extraordinary. The phenomena of Montgolfier's hydraulic ram, and the principles on which its action is founded, will afford an elucidation of our meaning. Is not an individual who chooses to let blood periodically more subject to plethora than before? or, in other words, is not the tendency to venous congestion increased by the very means which have been adopted to prevent the predisposition or tendency? On this periodic bleeding being neglected, apoplexy not un-

frequently follows. Those who, instead of reducing a plethoric habit by more rational means, till by excess of indulgence, and a pampered appetite, the veins are gorged, and venous congestion formed, may be assured that, though depletion may drain the veins of their vitality, the system will soon recruit the waste to overflow: action and reaction are equal in their momenta, and this law in mechanics will be found equally efficient in the physical structure of man. If the tendency to plethora be subdued by early rising, moderate or low diet, and plenty of rural exercise, the system will generally require no lancet for its reduction, while vigorous health may follow: after copious venesection, we are afraid the system is never safe for the future, unless its stamina are afterwards essentially modified; and how often does hydrothorax, &c. follow frequent and copious bleedings? We might appeal to facts, in order to substantiate our position, that, after copious bleeding, the system has ever afterwards a tendency to plethora and inflammatory action; but we presume that they are sufficiently numerous and notorious. These periodic bleedings, even though not copious, cause more blood to be elaborated habitually than the system requires: habitual discharges, as of *piles*, *ulcers*, *menses*, *&c.*, do the same, and, therefore, is their suppression injurious.

We are much indebted to Dr. Seed's interesting experiments for some decisive proofs in corroboration of these views. A small dog, which had a wound on the right side penetrating the lungs, was bled by cutting the left crural artery, the consequence of which was that the animal died in about half the time of another dog similarly treated by dividing the same artery while labouring

under no wound, but being healthy. In the wounded dog, the strength of the heart's motion slowly and gradually diminished; once indeed a sudden and rapid acceleration of the blood took place. We think this experiment conclusive on the question, and cannot refuse assent to Dr. Seed's inference from it, which is as follows: "No one doubts that the integrity of the functions of the lungs is necessary to the health of the body; it appears equally true that the more readily the blood is received into the lungs and returns through them to the heart, the more completely do we enjoy health." "This animal laboured under a wound of the lungs, which impeded their functions and interrupted the ordinary changes of blood; thus, though he lost less blood, he was sooner weakened, and much sooner destroyed than the subject in the preceding experiments." "Does not this experiment teach us that in some cases of diseases of the lungs an excessive venesection may prove injurious?" We think it does so. A certain quantity of blood is necessary to the complete support of the vital powers, and if it be abstracted and reduced below its healthy medium or standard, the vital powers, roused to a new, extraordinary, and unnatural action, may elaborate a morbid excess, and a serous effusion may follow, if the lungs are not in a state of integrity. It is evident that the usual quantity of blood cannot be aërated, and consequently there will be a tendency to plethora and hæmorrhage, or inflammation may supervene. The causes which predispose to fulness, or which excite, must of necessity be avoided. We quote Dr. Marshall Hall's* accurate, as we think it, caveat against blood-letting as a *preventive*

* Researches principally relative to the morbid and curative effects of loss of blood. London, 1830.

of inflammation: "It has frequently been proposed to repeat the remedy by way of preventive and security against a return of these symptoms. Of all the cases in which blood-letting has been instituted, none is so replete with danger." We are not presuming an opinion against venesection in pulmonary Consumption where it is requisite, and some peculiarities of the disease may require it; it is against venesection as a *matter of course*, and undiscriminating and copious blood-letting, or as a preventive; and the cases requiring a very moderate blood-letting will, we believe, be found extremely rare; besides, we much question whether the pathology of inflammation is well, if at all, understood. According to the experiments of Dr. Wilson Philip and Dr. C. Hastings, there is, in this phenomenon, a primary affection of the capillary vessels in an extension or enlargement of their diameters, and a slower movement of more numerous globules of the blood. M. Raspail states that the globules of the blood vary in diameter according to the organs which supply it, contrary to the general opinion which considers their diameter as constant and invariable in every part of individuals of the same species. The capillary circulation is less immediately under the influence of the heart; and, since this is the case, it is evident that though the augmented action of the heart may be subdued by bleeding, the local inflammation connected with the capillaries may remain the same. Fatality from venous congestion we consider as by no means incompatible with bleeding to depletion from a sudden reflux of blood to the brain. Dr. Hall's Researches are of first-rate importance, and it is hoped will have due weight with those who find a catholicon in their lancet; we doubt not but it would have been well for

pulmonary Consumption if the maxims of Dr. Sangrado had not been so rigidly enforced. Whether the lancet be still employed in the same extent as before, or has given way partially to the topical application of leeches, we cannot tell, but the latter seems on the increase, for in the year 1821 France exported a million and a half leeches; and, in 1826, thirty-three millions six hundred and fifty thousand. We might quote numerous excellent authorities to prove that a practice which we have long regarded with special horror, has been opposed by some eminent individuals, while it has staggered others. Dr. Herberden has somewhere said that in very few diseases does the blood afford the practitioner any useful information. Dr. John Davy observes, that even in violent inflammation the blood is often neither *buffy* nor *cupped.* In ordinary cases of inflammation, as of the pleura and lungs, the blood is at first neither *buffed* nor *cupped.* These, therefore, it is evident, are not safe criteria, though they have been received as such without any inquiry into the matter. In pneumonia and pleurisy the blood is examined: if *not* buffed, and other symptoms indicate the necessity of depletion, we continue to bleed—suppose the blood abstracted in pulmomonary inflammation supervening on tubercular Phthisis is *strongly buffed,* and the symptoms are little if at all mitigated, shall we, asks an intelligent writer, on account of the state of the blood, *bleed on?* or would it not be more rational to subdue by other means? This is a strong question, and it is obvious we might bleed on till the patient dies, and the blood that flows at its ebb appear as cupped and buffed as at first. It is surely time that we pause and enquire what rational good can be expected from or be served by it. In some cases a pa-

tient may faint when four ounces of blood are abstracted, and under other diseases not faint when that amount is increased to twenty; thus, Dr. Hall informs us that if several patients affected by dissimilar diseases, yet all of the same strength and constitution, be bled *ad deliquium*, they will be found to have lost various quantities of blood.

Dr. Gregory says, "blood-letting may perhaps be occasionally necessary in continued fevers, when the inflammatory symptoms are very high, but I am more and more convinced every day of its general inutility; such symptoms are very soon succeeded by great debility, which this evacuation always renders more dangerous. I have sometimes been led to employ it from the apparent urgency of these symptoms, but had often occasion to regret it afterwards."*

* "Copious losses of blood of all kinds," says Dr. Armstrong, "seem capable of inducing Phthisis in patients in whom a predisposition to it had before existed. Copious losses of blood not only exhaust the constitutional powers immediately, but they are invariably followed by an agitated sort of re-action throughout the whole arterial system." And can we doubt if copious venesection disposes the constitution to Pulmonary disease, that it will fail to aggravate the symptoms when incipient Phthisis has already waged war on the system? Blood letting has been, and we believe still is, had recourse to in the primary stages of Pulmonary Consumption. "I have," says the same authority, "in some cases of apparently genuine Phthisis, ordered repeated full bleedings from the beginning until it would have been temerity to proceed farther, yet the disease passed on, and the blood drawn generally exhibited the buffy coat to the final operation." He also contends that, as far as the "buffy coat" is concerned, there still remained symptoms of inflammatory action, and even the "buffy coat may be occasioned and maintained by repeated abstractions of blood."—*Practical Illustration on the Scarlet Fever*, &c. London, 1818. 8vo. pp. 249, 287.

CHAPTER II.

FOOD—IDIOSYNCRASIES—AMUSEMENTS AND CLOTHING—INFLUENCE OF EXOTIC CLIME—CURSORY GLANCE AT SOME OF THE CHIEF PLACES RESORTED TO BY THE INVALID.

Our real wants are few, but luxury has made them innumerable, and almost every thing that moves on earth, in the sea, or air, has been put in requisition, and devoured by that omnivorous animal, Man; and though animal and vegetable life chiefly contributes to his support, we are informed by Humboldt that he discovered a tribe in South America, the Ottomaques, that subsisted partially on a species of magnesian and aluminous earth; and we find, according to Spix and Martius, that the natives of the river St. Francisco also eat earth: the soil there contains nitre; and boys and girls may be seen to eat the whitewash of the walls, and sometimes wood, cloth, and charcoal. In South America, indeed, according to the same authorities, nothing in the shape of life comes wrong to them, for they eat serpents, lizards, and ounces; and Humboldt has seen children drag enormous centipedes out of their holes, and cranch them up. The Negro children are as fond of a bit of rock-salt as those of England are of sugar-candy. The mere *catalogue raisonné* of substances used as articles of food or luxuries would occupy a volume. Cannibals, or anthropophagi,

devour human flesh. At Esmeraldi their delicate morceau is a roasted monkey. Puppies, on the Missouri and Mississipi, are choice food. Horse flesh in Arabia; elephant's flesh in India;* camel's flesh in Egypt. The pariahs† of Hindustan, attracted by the smell of putrid carrion, rush in crowds to dispute the mass of corruption with the dogs, vultures and kites. The wild Bushmen generally devour their food raw. The natives of the Kurulean Islands are very partial to bear's liver. The Chinese are not scrupulous in their choice: cats, dogs, rats, serpents, all are pressed into their *cuisine.*

Mr. Dobell, in his Travels in Siberia and China, says, "the Chinese eat frogs, cats, dogs, and rats: they are washed and prepared, as if they were the most delicate food; and their rice is always washed a dozen times, before it is boiled."‡ The Kamtschadales use the fat of seals for oil and butter, and are often compelled to live on fish oil, but they form it into a paste with saw-dust, or rasped fibres of indigenous plants. When the Indians of Asia or America take long journies, and are likely to be destitute of provisions, they mix the juice of tobacco with powdered shells in the form of small balls; and this dissolving in the mouth allays the sensation of hunger. The Negroes in the interior of Africa often subsist entirely on gum arabic; and we are informed by Hassel-

* Elephant's *Paws,* according to Vaillant, is much esteemed in some parts of Asia.

† This term is applied to a species of dogs, as well as a *caste* of people. A friend, long in India, thinks the remark applies to the former, and is not aware of the circumstance applied to the *latter.*

‡ Vol. II. p. 216.

quist that a caravan of Abyssinians, on their journey to Cairo, subsisted for two months on gum arabic. The crew of a vessel, also, destitute of provisions, were supported on gum senegal, of which article the cargo consisted.

The Calmucks subsist on *raw* flesh, and they are *ugly :* this is rather alarming to those who follow their example, and eat their meat *rare*, as it is termed, or half cooked, a few degrees removed from *brind.* An Esquimaux dines on a whale or a walrus ; and occasionally their dinner consists of an *old sack*, made of fish skins. We were told that, some years ago, when gas was unknown as a source of illumination, Russian sailors, at Leith, made no scruple to dip their sop, or morsel, into the train oil of the lamps. The Solan Goose or Gannet is sometimes cooked in Scotland, notwithstanding its effluvium is so overpowering that the process cannot be risked in an ordinary kitchen, but must be conducted either in an outhouse, or in the open air. Veal must be *blanched.*

The following is rather an odd bill of fare : one of the outposts of the French army, engaged in the taking of Algiers, killed two snakes and a lion, which were duly sent to the floating *Restaurant*, on the following day. The *Carte du Jour* presents the following items, in consequence of this supply : " filet de Lion, sauté dans sa glace, matelotte de serpens, boa à la tartare, fraise de lion à la poulette, pieds de lion farcis, lion fraisé aux petits pois, &c." " We defy any one," says the author of Transalpine Memoirs,* " to ascertain the real state of the Italian or French composées of the cuisine. At an inn, on the route from Sienna to Acquapendente, a

* 2 vols. 12mo. Bath, 1826.

turkey, whose neck was wrung towards evening, was served up, disguised as *bouilli*, boiled beef, as a stew of turkey, and as a quarter of roast lamb." Verry, of the Palais Royal, a celebrated Restaurateur, sports, if we remember right, upwards of 300 dishes on his *Carte du Jour;* a carte of this kind, containing 150 dishes, being put into the hands of a Londoner, he immediately returned it, saying, it must be a mistake, it was a *bill of lading.*

The natives of Tonquin, according to Dampier, give their friends arrack, in which snakes and scorpions have been infused. The Lotophagi lived on the lotus, while the Ophisophagi, and the Troglodites lived on serpents. The Kalmuc Tartars also feed on snakes, &c.; and the Syrians eat crocodiles. In the annals of Tacitus, we read of a man at Colonia Agrippina, whose favourite dish, like that of De la Lande, was spiders. Bear's paws, birds' nests, and sea-slug, are dainty bits; raw is esteemed superior to roast mutton, by the natives of Thibet. The inhabitants of Cochin-China prefer rotten eggs to fresh, so much so that putrid eggs are rated thirty per cent. higher than fresh ones. Dampier tells us that "the Indians of the Bashee Islands eat the bodies of locusts," and he too relished this species of food. The Tonquineze also feed on locusts, which are either fresh or pickled; sometimes broiled on coals. The inhabitants of Madagascar not only eat them, but prefer them to the finest fish. Rein-deer, and a kind of meal formed of pounded fish, are used in Lapland and Iceland; brind, still quivering with life, in Abyssinia; in Australia a good fat grub would be preferred to every thing else; and in the West Indies a large caterpillar, found on the palm, is esteemed a luxury; while the edible

nest of the Java swallow (hirundo edulis) is so rich a dainty, that the auxiliary ingredients of the dish will cost about £15. In the Levant, the locust (gryllus cristata) is sold in the market as a chief article of diet. In all these things the continent of Europe is not a whit behind the rest of the world, and displays feats which may well excite our "special wonder." Passing over such dainties as *sawer craut*, *olla podrida*, *caviar*, &c., France dresses up frogs and snails, con amore. *Frogeries*, and even *Viperies*, are necessary adjuncts to the mansions of the noblesse. The quantities of frogs we have seen in some of the markets on the continent have excited in us the utmost surprise: in the market of Auxerre we had the curiosity to enquire the price of snails (helix pomatia), and found them rated at three francs (2s. 6d.) per 100; not long ago indeed seven snails were charged a franc at an inn in Germany. In Italy we have seen served up the *pholas*, *echinus*, *sepia*, &c., while "mine host," at Terracina, asks his guest whether he prefers the eel of the hedge or that of the river. The Astronomer De la Lande was remarkably fond of spiders, and would chuckle them up *sans cérémonie* whenever they came in his way; and a young lady, too, had a particular predilection in that way.

We conceive, however, that Great Britain in these excellencies far transcends her continental neighbours: not to mention the "braxy" of Scotland, which is putrid mutton, the sheep having died of the rot, it is notorious that game and venison are seldom relished till it is "high," or, in honest and faithful language, till it is a mass of putrefaction, and disengaging in abundance one of the most septic poisons the chemist knows of; in

numerous cases it is a mass of life and motion, the offspring of putridity. Mr. Hunter, however, says that "boiled and roasted, and even *putrid* meat, is easier of digestion than raw;" so that these would-be Epicures who take their food after the manner of Abyssinians, do violence to this precept, while they who take *putrid* (in common parlance, *high*) game, as *intenerated* (as it is called) meat, *i. e.* on the verge of putrefaction, are but a step removed. It is truly astonishing what the respiratory organs of some individuals can withstand. We remember having been once at an inn in Derbyshire, in what is commonly termed the "commercial room," when a dinner was brought in for a "traveller" about four hours later than we should select for that meal; *game* was one of the dishes, and so horrid was its putrescence, that had we not thrown up the window and made our escape, we should certainly have fallen a victim—at least temporarily; but the experiments of Dupuytren, Chausier, and Thenard, are quite conclusive. Though we know not that the monstrous-sized liver of the goose, an effect of disease, has yet found its way into the English *cuisine;* all the rack and the ingenuity of cruelty and torture have been exhausted to supply the cravings of a depraved and degraded appetite, and one which human nature might well be ashamed of: the bull may be no longer "baited" for this purpose, but pigs are still whipped to death; lobsters are boiled alive; cod are crimped;* and eels are skinned,

* Sir Anthony Carlisle has been *specific* on the delectable art of crimping cod. When caught, the fish is struck on the head; many transverse sections of the muscles are then made, and it is thereafter immersed in cold water. If the fish is large, thirty minutes are required to retard the natural stiffening of the muscles!

writhing in agony; not to mention geese, which are duly nailed to the floor by their webbed feet that they may repose and fatten; turkies are crammed, and finally bled to death under the tongue; hares are hunted, and die in fevered inflammation, or, it may be, duly inoculated with the poison of hydrophobia, from dogs excited to madness by the chace. Now all these practised cruelties, though they may blanch the cod-fish, or tinge the lobster with ruby, excite inflammatory action in the animal suffering them, and inflamed surfaces evolve morbid or poisonous matter.

Even honest Evelyn seems to have been somewhat of an Epicure in his way, for he tells us that "the young acorns, found in stockdoves' craws, as well as the incomparable salads taken out of the maws of partridges at a certain season of the year (which gives them a preparation beyond the art of cookery), are a delicious fare." Well may we say, "De gustibus nil disputandum est." Nothing will do now-a-days but French bread, and its whiteness must be produced by *alum;* by and by, we presume, chlorine will be employed to bleach it! In Paris, the sulphates of copper and of zinc are used by the bakers to such an extent as to make the bread noxious. After all this, can we wonder that diseases, in direful array, should invade our dwellings—and that gout, rheumatism, paralysis, and apoplexy, with Consumption, and the whole host of hepatic derangements, from whence Consumption and kindred pulmonic complaints often spring, with various diseases of the chest, should be our portion? These are persisted in, in utter defiance of the laws of life, and we continue our rebellion at our peril. All this is certainly suicidal, though we may plead lunacy

to save us from the sentence of a *felo de se.* The only wonder is that pestilence does not ravage our borders and sweep us off wholesale into the grave. We are, moreover, of opinion that the very common practice of smoking cigars, now so prevalent, must eventually lead to pulmonary diseases. Even the leaf of the genuine herb may prove injurious, not to mention its common and baneful sophistications. Perhaps *dried dock leaves* are the most harmless of these adulterations; but *lead*, *antimony*, *copper*, *corrosive sublimate*, and *black hellebore* may be detected. Tobacco, indeed, is now duly *dyed* of specific shades with the most poisonous ingredients. A celebrated and talented divine, now no more, not less celebrated for his sound piety than for his elegant and classical diction, indulged the practice of smoking to an extent which admitted but few rivals. After death, *one hundred and twenty gallstones* were found, as we are informed, in the billiary duct: we fear this practice of smoking contributed not a little to their formation, and now feel no surprise at having seen him, on an *ordinary occasion*, before retiring to rest, take 250 drops of laudanum—a drug which is now used by individuals in this country to an extent as in some cases to stagger all belief; and facts have been communicated to us we should not dare to state, as their detail would bring our credit into extreme peril, and in such cases names could not be mentioned without a breach of confidence, while courtesy and delicacy would be both compromised.

As to the *science* of eating,* Geta used to eat alpha-

* We have not only "a manual for the coffee drinker," but that of the "amateur of oysters, literary, medicinal and dietetic," in

betically; Count Rumford recommended *tough meat* to prolong the pleasure of eating, and his directions for an attack on hasty pudding, by assault or storm, includes all the science implied in the *tactics* of the art. Petronius described the zodiac as encircling a dining tray, where an apposite dish was placed on each sign: this last might serve as a hint to the Astronomical Society, and would be quite in character! In these days of the "march of intellect" we know not what may come to pass: it is not long since it was suggested that our carpet-patterns might be made useful in this way, by being formed into *maps*. When our pulse beats health, condiments may well be dispensed with; and an artificial excitement will but ill supply the loss of health or atone for its absence. "No sooner does the appetite fail than the cook, the confectioner, and chemist are up in arms to redress this *grievous calamity*, and caudles, condiments, and tonics pave the way for bleeding, purging, and water gruel."† Meals, at stated intervals of five or six hours between; wholesome food, with a due proportion of animal and vegetable diet, and this last is essential, because principles are found here which the other cannot supply, but which, if we are not mistaken, are requisite to the support of healthful life; the quantity moderate, and the fare simple

which no less than *forty-six kinds* are described. This elegant minuteness far outstrips the chonchologist, whose *catalogue raisonné* in the *ostræa edulis* is comparatively a mere *blank*.

† That *Apicius Britannicus*, the late Dr. Kitchener, *advanced* the *science of eating* considerably: to which science, however, we fear Sir H. Davy was a *victim*, and from which the Dr.'s "peptic precepts" could not save *himself*, and cannot be expected to preserve the devotees of India curries, mulligatawnies, and chattnies.

and unmixed; diluents, when nature asks for them, and at no other time; varied from day to day the board may be, but the appetite should not be tampered with, or despoiled of its simplicity; these, with early hours and exercise, are conditions necessary to the support of health, and will maintain it. In "Letters on early rising," there is the case of a young lady restored to health by a change of habit in this particular; nothing can be more important. Not less than six hours' sleep, and not more than eight, will be found, in ordinary cases, sufficient repose.

To prescribe any fixed rules in dieteties seems very absurd, because this will depend much on the constitution of the individual and his occupations, and the season of the year and its variations. Van Swieten justly observes, that "to assert a thing to be wholesome, without a knowledge of the person for whom it is intended, is like a sailor pronouncing the wind to be fair, without knowing to what port the vessel is bound." According to Dr. Paris, "*suet* pudding is to be considered the most mischievous to invalids in the whole catalogue; and, he continues, "all pastry is an abomination. I verily believe that one half, at least, of the cases of indigestion which occur after dinner parties, may be traced to this cause:" and we are firmly persuaded this is the case. It is curious to review the change that has taken place in the article of diet. Our aboriginal forefathers lived on flesh and milk, and Catherine of Arragon could not command a sallad, until a gardener from the Netherlands was sent for to raise it. A maid of honor, at the court of Elizabeth, would breakfast on beef, and drink ale after it. In those times, the breakfast for "my lorde and my ladye" consisted of "half a chyne of mutton, or els a

chyne of beef boiled;" and the children had "a chikynge, or ells three mutton bones boiled, with certain quarts of beer and wine." Fryar, in his "Good housewife," and who wrote in 1602, has some quaint remarks on dress and diet: he cannot define what preserves are for, "except to please children and fools, or for the indulgence of gluttons." "Tell me, my good dames, what you have to say in favour of these curiosities (preserves)? Have you more pleasure in eating your larks and pheasants, your dainty bits, with rich poignant sauces and delicious costly wines, than they (the peasantry) in a mess of good milk pottage, and a lusty piece of bread and cheese, and a cup of nut-brown ale of their own brewing?" "Do you sleep more soundly on your beds of down, doubly fortified with silk or sarsnet, than they on their mattresses of moss and straw, exposed to the pure air which whistles through the decayed casement or broken pane?"

Flour is now said to be sometimes made from ground wheaten straw, and, when baked into bread, is eaten by the lower classes on the continent. The mountaineers among the Apennines often fare ill enough; chestnuts, as we have personally witnessed, being their only food; but really the *polenta* of the Italians, and the "crowdy" of the Scotch, are bad enough. Moderation in meals and regularity in time are the principal things to be attended to; not that we would have the former weighed by the scruple or measured by the cubic inch, or the periods adjusted by the chronometer. We may err from being too much the slave of habit, and suffer in an accidental derangement of a too precise invariability; still, a well-supported regularity, in the intervals between meals,

is essential to the enjoyment of good health. Dr. Paris says to his patients, and he is right, "I will waive all my objections to the quality and quantity of your food, if I were sure such a sacrifice of opinion would ensure regularity in the periods of your meals." And, in fine, as Mr. Abernethy has observed, never let us forget that "we are not nourished by what we eat, but by what we digest."

Our modern gourmands cannot, at any rate, compete with those in ancient times: Phagon, lauded by the Emperor Aurelian, ate a boar for dinner, and would eat 500 frogs at a lunch; and at a *petit souper*, 20 Samian peacocks, 14 Chian crabs, and 10 dozen Egyptian dates. Another, in the time of Maximilian Cæsar, devoured an uncooked calf, and took a quantum sufficit of wine to wash it down. A young sentimental lady, a *bas bleu*, of Alexandria, took daily 12 pounds of meat, and four gallons of wine.

We may instance, on the other hand, the *virtue* of extraordinary abstinence. Not to speak of folks fed by fairies, Pliny describes a race that had no mouths, and lived on the aroma of the flower. Dr. Beddoes mentions a seminary where 40 girls were fed for two days on a leg of mutton! There *was* a convent on the site of the bastile, under the patronage of the Duchess D'Angouleme, where they *fasted three months in the year*, and for the remaining nine the fare was meagre: it is to be hoped that these poor females get something *now* to eat; and that the time for such pent-up living sacrifices is happily past: Christianity claims no such victims for her shrine.

Generalization in dietetics is all that can be done, for the instinct of our natures will point out the food conve-

nient for us, such as may be safely taken, and will easily digest. It is excess, and the ideal creation of luxuries, which consume our vitals and destroy us. To particularize in dietetics is a mere useless task and piece of foolery, for there exist not two constitutions or two appetites precisely toned alike; and what is relished by one might pall upon the appetite of another.* To construct a metre of regimen, therefore, in the shape of a catholicon, is a useless measure, and would serve very little purpose. Hares are said to eat the seeds of hemlock, and pheasants those of stramonium. Pigs devour the roots of henbane; and, on the authority of Dr. Withering, the œnanthe crocata, though poisonous to man, is eaten by sheep; while the cicuta aquatica, though fatal to cows, is greedily devoured by goats, and even eaten with safety by horses and sheep. Nor is there a greater latitude between the inferior creation and man, than between one constitution and another in the human species. In certain generalizations we may agree, but must allow the instinct of our several natures to be the purveyor for us. When our predilections are somewhat out of the ordinary range, or our antipathies wander from the usual beat, then Idiosyncrasy is the appellation by which we designate the eccentricity; and there is scarcely any product, animal or vegetable, that

* We, however, entirely agree with Mr. Warren, that the Mosaic classification, as to animal food, involves the profoundest principles of science, and have no hesitation to state that *swine's flesh* is the germ of numerous diseases, especially those of a cutaneous or eruptive kind—it is congenial fuel for scrofula and consumption. If we are to judge from the effect of this food on *ourselves*, in a series of experiments made expressly in reference to this question, it would soon destroy that excellent constitution with which we are happily blessed.

has not revolted some individuals. Thus, Henry III. of France could not endure a cat; and we personally know similar antipathies towards poor puss. Tycho Brahe, the astronomer, though accustomed to soar among the stars, trembled at the sight of a hare or fox. Erasmus could not taste fish without falling into a fever. The Duke of ——— raises his encampment when the hay season sets in;* and a worthy M.P. moves off to the sea-side when Flora displays her casket and scatters fragrance on the air. Wadislaus, king of Poland, ran away at the sight of apples; and Johannes de Querceto, secretary to Francis I. of France, would fall a bleeding if an apple were held near him.

A physician informed us of a case wherein urticaria was produced by taking lemon juice; also, an instance wherein the smell of tobacco-smoke produced violent ptyalism. We have heard, indeed, of a female who would run from a lighted pipe or cigar, as if it were a personification of the king of terrors: even linseed has proved injurious; nor can we account for these things: as Corneille says, "Par ce je ne sçai quoi qu'ont ne peut expliquer." Branerinus mentions a girl at sixteen who had lived entirely on milk, and could not endure bread. Martin Schoakins wrote a book, entitled "De aversione casei;" but he leaves the question as he finds it. An Abbé lost his voice, if he smelt hot lobsters; but if they were cold, he could eat them. Schenckins tells us of one that would fall into syncope at the sight of a pig,

* Called the *Hay-fever*, or asthma, and seems connected with the aroma of the *Anthoxanthum odoratum* and *Holcus odoratus:* two sweet-smelling grasses, that give to new-mown hay its odoriferous character.

and would not recover as long as it remained at table. Montaigne says, "some run away at the sight of apples, as if a musket were presented at them; others are frightened out of their wits at a mouse; and some again are not able to abide the sight of cream, or the stirring of a feather bed." A grain of calomel has produced salivation for weeks. An abbess of Pisa could not swallow pills: it was sufficient that they were crushed between the fingers to produce their full effect. After taking acids, many are afflicted with cutaneous eruptions; and some, as a defence, take a box of *creta preparata* (prepared chalk) in their pockets. Some cannot digest an apple;* others cannot masticate rice. Sir James Earle, and Dr. Robert Halifax, attended a child six years old, on whom strawberries produced an irritation in the kidnies. Opium, senna, and oil of almonds produce erysipelas in some. The black currant of Zante is never digested by children; yet, strange to tell, it often forms an ingredient in their food! Milk has produced deleterious effects. New honey sometimes produces *cholera.* Donatus mentions a youth who could not eat an egg without swelled lips, and purple spots appearing on his face. A friar found relief in a stomach complaint by eating nuts, and consumed for this purpose many bushels annually.

Cheese is most frequently the subject of antipathy; but we have also heard of cucumbers, and even sweet almonds and strawberries. Cardan, the philosopher, could not endure eggs. Crassus had an insuperable dislike to bread; and the celebrated Scaliger was thrown

* This is also our own case.

into convulsions at the sight of cresses. Mr. Wadd mentions a case in which the odour of ipecacuanha produced the most violent effects; and we know a gentleman who was taken suddenly ill, by accidentally smelling at a phial which contained the tincture of digitalis. We were personally acquainted with a case, wherein a lady was seized with a cutaneous eruption all over the face, arms, &c. from having accidentally eaten a piece of sponge cake, into which rice flour had entered. The head was swollen to an enormous size, and the symptoms were altogether so frightful and alarming as to threaten immediate danger. Indeed, this individual could not even touch rice flour without such contact being followed by symptoms of poisoning. The gums of some individuals have bled at the tearing of brown paper. Pope Pius VII. could not endure musk for a moment, and was compelled to remove, if that perfume were used by any one who entered the papal presence.

The feel of velvet with some persons produces nausea and syncope. A lady informed us that she became exceedingly ill from eating a small portion of a date; and Sir Kenelm Digby says that Lady Heneage had her cheeks blistered by laying a rose upon one of them while asleep. Cardinal Caraffa and a noble Venetian were confined to their rooms, for fear of their lives, during the rose season. Cardinal Henry de Cardonne swooned at the smell of a rose; and we believe there is a British officer similarly affected from the same cause; so that

"To die of a rose in aromatic pain"

may be literally true. These are, it is granted, extraordinary and extreme cases, but almost all are tinged with more minute and delicate shades of diversity.

The *chemicals* of the toilet, duly "compounded after the art of the apothecary," very materially assist the messenger of death. There is scarce a cosmetic that is not a deleterious and destructive poison—"Vegetable" and "Grecian" dyes for the hair, eye brows, &c. are solutions of nitrate of silver, a powerful escharotic. Depillatories are compounds of arsenic. Pearl white, a protonitrate of bismuth; and lotions for *the skin*, corrosive sublimate, &c.: thus are unsuspecting delicate females lulled into the belief that these are harmless, because they are graced by pretty names,—Oriental, Italian, or French. *Gowland's Lotion*, *Milk of Roses*, *Caledonian Cream*, *Kalydor*, &c., consist, according to Dr. Paris, of *corrosive sublimate* in almond emulsions, with a proportion of *sugar of lead*, or oxyde of bismuth. We perceive a costly affair, called "*Real Pearl Milk*," sold at a *sovereign* the bottle, in consequence, it is stated, of its precious ingredients. The advertiser says, it is so harmless that he will swallow a bottle of it, if he is paid for the experiment! In a kind of P. S. there is a nota bene to this effect: the highest price given for MISSHAPEN PEARLS!! We are altogether ignorant of the virtues of this *valuable* article: chemically speaking, powdered *chalk* and powdered pearls are similar, and, of course, we can see no harm in either. We may remind our readers of the woman who, to save her pearls from pillage, cast them into beer, from whence they were, in a semi-gelatinous mass, recovered; and Cleopatra's madness is recorded. The *price*, however, is a tolerable guarantee against the chemical analysis of the "Real Pearl Milk." The incense of burning pastiles is extremely injurious to respiration, and ought to be abandoned by all who

value the enjoyment of health. The fooleries and fopperies of fashion; the theatre* (where lack of morality now seems to be the surest passport to adventurous success), the ball-room, the rout, and the masquerade, swell the train of the hostages of the king of terrors, and pour forth their multitudes into this Gehinnom, or valley of shrieking.

" A few months of dissipation in fashionable society," says Dr. Clark, " turn the scale, and place beyond the resource of art." Dr. Beddoes observes, " a faithful delineation of the life lead by women in opulent families would appear not less parodoxical than the observances of the most uncultivated tribes appear to us."†

" Youth has been," says Dr. Johnson, " and ever will be, prodigal of life; and while the sick bed and tomb lie masked under the seductive features of the theatre, the ball-room, and the drawing-room, they will continue to be thickly tenanted by premature decay and self-destroyed beauty."

Unequal clothing, worse than light or flimsy apparel, and a disregard to the changing seasons, which should always be the standard by which to regulate dress, are the great inlets to pulmonary disease. The periods of noon and night require their diverse habits. It has been

* " It has been said, and probably with too much truth, that at least one-third of the frequenters of the theatres derive *particular enjoyment* from the performances of persons who have acquired celebrity by their *vices* in private life; and that another third, at least, consider that the public have really nothing to do with the conduct of actors and actressess off the stage!"—*(London Courier, 22d June.)* So much for the boasted *morality* of the theatre!

† Page 122.

stated that it were well if silk were now what it once was, worth its weight in gold, as it would check the ravages of Phthisis. Such clothing should be worn in cold weather as may insulate the system, and, in summer, what will allow a free transpiration from the cuticular surface. In phthisis the functions of the skin seem first disordered, and the subsequent colliquative sweats seem to prove this. There are times and seasons when the body must be swathed in flannel. Sudden transitions should be avoided, or due precautions adopted to shield ourselves against their influence; checked perspiration is an evil of first-rate magnitude. Wet clothes are chiefly dangerous when we are stationary in them; when locomotive, their evil influence is less. Warmth of the feet is always essential, and when season favours this by exercise, health is its immunity; when sedentary, this prerequisite to the enjoyment of health must be secured by other means. We are averse to water-proof dresses, for such check and confine the emanations of heat and perspiration, which always operate, though the latter may be insensible, as long as the lungs play and the nerves exercise their functions. Wet or damp feet are to be avoided; and the means adopted to secure this end have often set common sense at defiance: thus *cork* soles, and other spongy materials, that *absorb* and *retain* the wet contracted by the shoe leather, so that the feet always rest upon a swamp! Thin plates of copper, once used as a substitute, were abandoned in due time, but not until they were found to be poisonous, while the superior conductibility of this metal was overlooked. We more than doubt the propriety of water-proof shoes, secured by a coat of caouchouc varnish: in snowy or wet

weather, galoshes* will best secure the end proposed and answer every purpose; damp shoes should be changed as soon as possible. We have not considered it right to interfere with female attire; the exercise of good sense and becoming discretion will guide females aright, and direct their choice; and as to those who may consider it unfashionable to reflect, or who scorn to think, our remonstrance would be of little avail.

It is a fact worthy of record, that females of the society of friends are less frequently, *cæteris paribus*, the victims of pulmonary disease than others, and we have the authority of Dr. Armstrong for this. We would not exactly advocate their dress, though their attire is often elegant in its simplicity, but we admire the veil of modesty, the loveliest charm of female loveliness; and a profusion of lace and ribbons is poor substitution. Gossamer gauze is by no means calculated to protect the system against the chills and damps of a hyperborean region like ours.

A silk manufacturer of Berlin has presented to the Society of Arts of that city an article for shirts called *toile de soie*. Some physicians have stated it conduces to health; and we believe a similar article for this purpose has been manufactured in this country. The most extraordinary material for dress is that spun by the larvæ of the *tinea punctata* and *T. podilla*, both of which have been employed by Habenstreet, of Munich, to work on a paper model suspended from the ceiling. The silk-worm spins the cocoon from which the thread is reeled and woven in the loom; and M. Bon, a Frenchman, obtained

* Now sometimes made of india-rubber; and in America we observe even *hats* have been made of this material.

from a species of spider a sufficiency of thread, for weaving into gloves and stockings. This author published a dissertation on spider-silk, in 1710, and presented specimens of stockings and gloves both to the French Academy and Royal Society, made of this ash-coloured spider silk, in which Reamaur also succeeded. Whether with the silk-worm or the spider, however, the insect merely spins the thread; but here the larvæ not only do this, but also weave the tissue agreeably to pattern; for by giving to this model any specific form or dimensions, M. H. has thus modified the fabric, and obtained square shawls, of the dimensions of an ell, and shawls two ells in length and one in width. Also, an air-balloon, four feet high and two feet diameter; and a lady's complete robe with seamless sleeves: one or two larvæ can weave a square inch of this gossamer tissue. Those parts that are not to be woven are smeared with oil, which prevents the insects weaving there. This gauze has been worn by the Queen of Bavaria, over her court dress. We have been informed by a gentleman who has seen this delicate fabric at Munich, that such is its singular levity, that a portion of it resting on the table, by the introduction of a gentle current of air, rose like a balloon to the ceiling. Of its extreme lightness some idea may be formed, when it is stated, that the balloon referred to weighed less than *five grains*. The warmth of the hand alone inflated it; and the flame of a match, introduced for a few seconds under it, caused it to ascend, and it remained suspended for half an hour. When the shawl is stretched, it is blown into the air by means of a small pair of bellows, and then resembles a light smoke. The *tinea padella*, or "common ermine moth" is not uncommon in gardens and hedges, in the

early part of summer. Delicate *grey iron wire* has also been woven into cloth, and it is stated that a vest of this kind has been presented to his Majesty.

The importance of climate, in relation to the human constitution, is one so very manifest as to obtrude itself on the most listless observer. Man, it is true, is a locomotive being, and, as such, has often tried the influence of exotic clime and braved the vicissitudes of season and alternations of heat and cold. The human system can withstand, to a surprising degree, the shock of extremes, provided they are not too abrupt or long-continued; indeed, every season, as it revolves, presents these vicissitudes and alternations, though less divergent. European constitutions speedily become the victims of tropical clime; or, should the storm be weathered, the return to their native country soon numbers them with the dust of their fathers; for they return to die and be buried in the graves of their ancestors. The human constitution cannot long withstand the transportation from Great Britain to an eastern clime, or the shocks by which it is there assailed. It is a fibre in the hurricane—a feather hurried on the surface of the stream to the ocean, where all disappear; and of those who go to Sierra Leone, it may be truly said that they may "eat their bread in haste, ready to depart on the morrow." The Gold Coast is dreadfully insalubrious: out of sixteen hundred, nine hundred persons died there in three years.

To leave the banks of the Ganges, the lofty range of the Himālā mountains, and the plains of Hindustan, with all their monstrous imageries; and the tide of animation, which, like a living thing, invests and heaves their sur-

face—where, in fact, all is life and motion—is a tremendous change for mind and matter.

In the pestilence that arises from the swamps of Demerara, Europeans find an early grave: few survive the pestiferous atmosphere of that deadly land, or of the Leeward Islands. If they perchance return, they crawl about, the wreck of their former selves, and generally, after a few short years, the vital cord snaps with paralysis or apoplexy.

Mere change of air or of place, irrespective altogether of temperature, has produced the most decided effects in arresting or curing PULMONARY DISEASE. The decided advantages that accrue in cases of *hooping cough* are so very palpable that no sophistry can evade the conclusion; and this is powerfully analogous. The *modus operandi* seems yet a mystery, but some localities are more humid or more exposed than others, and these conditions must have their influence. Atmospheric agency on the animal functions will be modified by elevation, temperature, humidity, and the electric condition of the air. In a mild clime it is notorious complaints are mitigated; in the south of Europe, however, the temperature is a variable one, and the prevalent complaints are not subject to regular rules.

The chief countries to which patients migrate in order to escape from this fell destroyer, *Phthisis*, are MALTA, MADEIRA and TENERIFFE, MONTPELLIER, and other parts of the south of France, JERSEY and GUERNSEY, LAUSANNE and the vicinity of GENEVA, NICE, NAPLES, ROME and PISA, and the south of England. A few remarks on each of these in order may be relevant to the question, and properly precede our observations on what

may be rationally expected from change of place, and wherein consists the influence of exotic clime on the human constitution.

The temperature of springs has been supposed a correct medium of ascertaining the mean temperature of any district. This is true of the perennial springs in the vicinity of Edinburgh, as well as of atlantic Europe, and to a considerable extent also of southern Europe. According to Humboldt, however, the temperature of springs in warmer countries is almost always several degrees below that of the incumbent atmosphere. Von Buch found a spring at St. Cesareo, near Palestrina, in the Roman champagna, on the 20th of August, 9° 5 R., the temperature of the atmosphere 22° R., and mean temperature 12° 6 R. Schouw, who has made many interesting barometrical and thermometrical observations, and whose assiduity and accuracy we can, from the pleasure of personal acquaintance, amply attest, has proved—1st. That the mean *daily course* of the temperature of the atmosphere is the same at all hours, a fact which is proved by comparing the observations made at Leith fort, at Padua, in Apinrade, and Rio Janeiro. 2d. The coldest hour of the day in Europe is five o'clock in the morning, as a yearly mean.* 3d. The warmest hour of the day, according to the observations made at Leith, is three o'clock, p. m.; but by those at Padua it is two o'clock, p. m. 4th. The progress of the temperature is interrupted near its maximum and minimum grade; the rise is most considerable some hours after the minimum, and the fall of temperature

* A Gentleman who has paid considerable attention to this subject, states, that the coldest periods are just before *sun-rise*, and just after *sun-set*.

some hours after the maximum. 5th. The heat increases for nine or ten hours, and decreases for fourteen or fifteen hours. 6th. The greatest daily range of temperature in Europe is about 13° F. 7th. At Padua, the daily medium is at 8 hours 41 minutes, A. M., and 7 hours 52 minutes, P. M.; at Leith, at 9 hours 13 minutes, A. M., and 8 hours 27 minutes, P. M. 8th. The greatest daily range of temperature in Europe takes place in July, and the least in December.

Baron Humboldt makes the mean of the coldest month at Edinburgh 38° 3 F., of Paris 35° 1., and Rome 42° 1. Heberden makes the mean temperature of Funchal, in the island of Madeira, as corrected by Dr. Sçhouw, 67° 3.

According to Humboldt's *Lignes Isothermes*, or lines of equal temperature, Dublin, London, Manheim, and Vienna, possess the same mean temperature, and are as follows :—

	Lat.	*Summer Temp.*	*Winter Temp.*	*Mean.*
Dublin	53° 21′	59° 54′	39° 2′	49° 1′
London	51° 30′	63° 14′	39° 56′	50° 36′
Manheim	49° 29′	67° 1′	33° 8′	50° 18′
Vienna	48° 12′	69° 26′	32° 72′	50° 54′

Dr. Sçhouw considers that climate has not changed its temperature during the lapse of ages. The date palm he refers to as bearing him out in these conclusions. This species of palm requires a mean temperature of 78°, to mature its fruit; and it is as successfully cultivated now in Palestine as it was in the earliest times of which we have any record. Thus Jericho was called the "city of palms," from the number that grew in its immediate vicinity; and "Deborah's palm tree" is mentioned as situated between Rama and Bethel. We have the

authority of Pliny that the palm tree was frequent in Judæa, and chiefly about Jericho. Tacitus, Josephus, Strabo, Diodorus Siculus, and Theophrastus, all mention groves or woods of palm trees there; date trees are often seen on Hebrew coins: the date palm, it will be remembered, has been adopted as a type and emblem of Judæa, in the coin of Vespasian, termed "Judæa capta" from its inscription, and which bears on the reverse the captive daughter of Zion, weeping under the palm tree. We have a cast of one found a short time ago at Gloucester: the date palm is in fruit, and so well represented, that it cannot be mistaken.

Malta.—This island certainly possesses several advantages over many other places for the invalid. Valetta, its capital, is on the north side of the island, and the sirocco winds would in some measure be modified by their transit over the island, but we should still think a modified sirocco (or S. E. wind) breeze most unfavourable to the pulmonary invalid. We have been smitten by its influence on the shores of the Mediterranean, and can readily conceive how balefully it might act where the lungs are morbidly affected. In winter, however, at Malta, the northerly winds are always tempered by crossing the Mediterranean, after they leave the chilled surface of Europe; while along the southern parts of Greece these winds still maintain their original coldness; the reverse of all this obtains towards the close of summer: these winds being cool at Malta, and dry and hot on the southern shores of Greece.

In Dr. Hennen's Medical Topography of the Mediterranean we have some interesting and valuable remarks on the climate of Malta. He observes that "one third of

the deaths from Pulmonary Complaints arise from phthisis, and, in six years subsequent to 1817, the deaths from the hospital, arising from Pulmonary Affections, amounted to 2376, something more than a fifth of the entire mortality. In 1820, the highest range of the thermometer, out of doors in the shade, was 90°, and the lowest 46° F.; within doors it sometimes rises as high as even 97°, and in the sun to 130°. The barometer is subject to little variation; the hygrometer, however, has a very extensive range, from 28° to 110°. During summer, the sun is clear and very oppressive, and remains so long above the horizon that the houses thus heated have not time to cool during the night; and therefore the temperature, by night or day, within doors, does not materially differ. The dews are heavy in spring and autumn. Fogs accompany the prevalence of south, south-west, and north-east winds; and the easterly winds are accompanied with heavy rains, which fall chiefly during night. The rainy season does not appear to be unhealthy, and this seems to be owing chiefly, if not altogether, to the absorbent powers of the calcareous strata. The sirocco winds are severely felt at Malta, and when they prevail, a blast of the *simoom*, though transient, sometimes sweeps over the island." "Their heat," observes Dr. Hennen, "is almost intolerable, literally like that from the mouth of an oven. If long continued, I have no doubt they would extinguish life altogether. Fortunately they last no more than a few seconds, rarely exceeding half a minute in duration, and seemingly confined to a narrow space, like a slip in the atmosphere, if I may so express myself; for they will be felt in four or five houses and not in the adjoining ones, and in one ship in the harbour and not

in another. On the 16th of June, 1821, for instance, the crew of a frigate in the harbour were so convinced that their vessel was on fire that they rushed simultaneously on deck."*

Madeira.—Dr. Clark says, "the climate which of all others I consider the best suited to Consumptive patients generally, is that of Madeira." And again, "to such Consumptive patients, therefore, as are likely to derive benefit from climate, I consider Madeira as affording altogether the best residence."† It certainly appears that the temperature of the winter there is higher and more equable,—circumstances that must plead very much in its favour; on the other hand, the rise of temperature in summer is sometimes so considerable as to operate injuriously, and even render removal at a specific period of the year expedient. We have many judicious and interesting remarks on the natural history and climate of Madeira, from the pen of Dr. Gourlay.‡ In the higher lands the pine is cultivated; on a lower level we find the wild olive, the orange, and a species of laurel, which serves as a substitute for mahogany; also the aloe and laurus camphora. As far as relates to the western hemisphere, the sugar-cane seems to have been first cultivated here; the sugar is fine and has a violet smell. The vine, cultivated so successfully, and so celebrated, is said to have been originally introduced from Cyprus, and according to Chaptal, in 1420. The pomegranate,

* P. 447.

† "The Influence of Climate, &c." London, 1830. 8vo. 2d Edition, page 345.

‡ Observations on the Natural History, &c, of Madeira. London. 8vo. p. 32. et sequent. Callow, 1811.

guava, and banana, orange and lemon, all grow freely in this island; and even the palm-tree attains a considerable altitude, but though it flowers and bears fruit in abundance, the fruit does not mature, consequently the seeds are useless and do not grow; the branches, when blanched, are used on Palm Sundays.

The salubrity of the island of Madeira, Dr. Gourlay very properly attributes to its uniformity of temperature. "A regular succession of land and sea breezes cool and purify its atmosphere during the whole year, and especially during the latter months: during the summer months the thermometer ranges from 68° to 76° F. in the course of the day, its medium heat in the shade being from 73° to 75°. In winter it ranges from 57° to 65°, its medium in the shade being from 60° to 64°, and during this coldest season of the year it only drops below 57°; when the northerly winds prevail on the heights, with falls of snow, it seldom rises above 65°, except when there are easterly winds. During the sirocco winds it has risen at times to 130° and upwards, when the heat was sufficient to melt wax." It appears that during the months of July, August, and September, the heat becomes excessive and intolerable. Dr. G. observes, affections of the chest are not uncommon in Madeira, and that Phthisis among the natives sweeps away all ages and sexes, and when once the symptoms are determined the disease is more rapid in its progress than in more northern climes. According to this author, October is the best period to leave England; and the period of sojourn in the island, most likely to benefit patients, is from November to the beginning of June. It is believed in Madeira, that phthisis is contagious, and Dr. G. seems half inclined to

think it is so. Dr. Henciken says, "since the summer of 1821, about thirty-five invalids have either reached, or sailed for Madeira; of this number two or three died on shipboard, and three within a month of their landing. Five or six just survived the winter; about an equal number lingered through the spring, and three or four entered upon and passed through a second winter. Of the whole number, thirteen only, including myself, are now in existence, (1824.) Two of these were cases of asthma, and two of chronic disease of the trachea and larynx; if these be excepted, and those be considered as dead who cannot be alive three months hence, the survivors of the original number of about thirty-five persons, in the short space of two years and a half, and who, so far from being cured, can only make the best of a precarious existence in a low latitude, will be reduced to six." This is a very discouraging account of the curative effects of the climate of Madeira, and even the natives seem to have little faith in it; for no sooner does an invalid land on the shores of the island than the remark is made—"there goes another to the Orange tree" —the English burial ground. Still its insular character, conjoined with its tropical temperature, will mainly aid the curative measures adopted, and check the progress of the disease, by imparting to medicine the balance of chances; because, whatever "head-way" (to use a nautical phrase) we may make on a disease in this country, is neutralized by the coming winter, and, like the stone of Sysiphus, it recoils to the point it originally possessed; besides, it cannot be denied that in almost every case this is adopted as a forlorn hope, or *dernière resource*, when the disease is verging on its climax. The individual

lingers to the last, and hope still "tells a flattering tale;" while expatriation is a painful thought to all the individual's relatives and friends, when it is considered too that the probabilities are, the exile of England may never return. TENERIFFE we consider as possessed of the tropical and insular influence possessed by Madeira, and that the difference, if indeed there be any, is altogether trifling.

In PORTUGAL Consumption is frequent. At Lisbon patients are sent to the other side of the Tagus. This disease, it has been asserted, is contagious,—a question which has been stoutly contested, and with reason. In Portugal it is certainly regarded as such, and so much so indeed, that a rigid quarantine is established: the poor invalid is completely insulated, and occupies a distinct compartment of the house, cut off from all intercourse with the family, with separate bed and table linen, knives, forks, dishes, &c., as if it were a lazaretto infested with the plague; even the wearing-apparel and bed-clothes are afterwards *burnt*, the earthenware dishes broken, and the walls of the apartment white-washed, &c. There seems no tangible evidence that Consumption is contagious.

MONTPELLIER.—Mr. Matthews observes that "it is difficult to conceive how Montpellier obtained a name for the salubrity of its climate. For pectoral complaints it is probably the worst in the world. It is true there is almost always a clear blue sky, but the air is damp and biting. You are constantly assailed by one of two winds, which are always blowing, bringing cold or damp." It is an unequal and a humid atmosphere that does the mischief. We have been taught to put this name as a pass-

word for all that is salubrious and delightful in clime, while in truth it seems altogether undeserving of such an epithet: however, the word has become current, though it appears on insufficient grounds.

Nice seems to be also lauded, but Dr. Clark observes its remedial influence will be chiefly beneficial in cases where there is a tendency to hæmorrhage, or congestion. Dr. Carter, as well as Dr. Clark, unite their testimony with Mr. Matthews, in considering Nice as unfavourable to pulmonary diseases. The breeze here, says Mr. Matthews, is pure, keen, and piercing, though "a soft and balmy air, oranges growing in every garden, lodgings without a chimney, and beds with musquito curtains, present the first signs of Italy." Villa Franca, near Nice, has been regarded as a favourable retreat for the invalid, and combining many advantages: during winter it averages six degrees of temperature above that of Nice. The hills which closely environ the houses on the N. W. and N. E. attain an elevation of from four to six hundred feet: the bay lies N. and S., and the country is exposed to the full influence of the sun. The wind does not affect it, except when it blows from the S. and S. E. The ascent of the amphitheatre is precipitous, but mule paths are cut in every direction round the aclivity; the soil is extremely luxuriant. "Hanging gardens adorn the barren ranges of hills with a rich clothing, being covered with the olive and carrubea, the fig, the almond, and the orange tree." Altogether it appears to be a remarkable and beautiful spot, and continental opinion seems to invest it with the grade of superiority, suitable as a residence for the pulmonic invalid. The Maritime Alps are very near Villa Franca, and may be seen co-

vered with snow. The *collines* abut on the town, and the wind from the N. E. is very cold.

From what we personally know of Genoa and its vicinity, and comparing it with the climate of Nice, as described by those who have visited that part of the continent, we should consider that Genoa possesses the same advantage of climate as Nice, with the superadded advantages of a fine city. In winter we have felt the weather sometimes rough enough, but the orange, and other traits of vegetation, concur to prove the climate similar; and we have seen several great American aloes in flower on the walls of that city.

> "Ecco! Vediam la maestosa immensa
> "Cittá, che al mar le sponde, il dorso ai monti
> "Occupa tutta, e tutta a cerchio adorna."

This description of Genoa by Bettinelli is not overcharged, and in truth we know not a more splendid spectacle than the city seen from the sea. While the orange and pomegranate flourish at Nice and Genoa, they do not succeed in Tuscany: at Fondi we found a few orange-trees in the open fields, and passed through a considerable plantation of them at Mola di Gaeta, between that town and the shore; we have also plucked oranges from the trees in the gardens of Cicero's villa. The dwarf palm, which grows in the southern provinces of Spain, we remember to have seen in the open garden at Orbitello, on the coast of the Mediterranean, and there the great American aloe (Agave Americana) is used as a field fence. Even at Nice the dwarf palm succeeds tolerably well, though at Rome it scarcely weathers the clime; there is, however, one on the Aventine Hill, among the ruins of the palaces of the Cæsars and Nero's golden house: it seems to wave

mournfully in the breeze, being alone. Physicians of course are inclined to laud the particular district where they reside, and M. Richelmi, of that town, exalts Nice as every thing that can be wished for,—the very *el dorado* for the invalid in the pursuit of health. Though rains are generally rare, towards the end of September it usually rains, almost without intermission, for one or two weeks together, and this is repeated about the beginning of November. When the thermometer at Turin or Paris indicates a temperature of 98° F. that of Nice may be 86°. The country is compared by Richelmi to a "vast garden of orange, lemon, citron, Siam orange (pampelmouse), olive, &c. trees." "The family of orange trees is there very luxuriant, very common, and cultivated to the height of forty metres above the level of the sea. The olive trees attain great perfection, and grow to a considerable size." "Vineyards are found every where, but more particularly on the hills." "Cheerful meadows separate the forests of orange from those of olive trees." There are also some beautiful palms to which even Rome, though situated more to the south, is obliged to pay a tribute for the use of their branches. The sugar cane, the pepper tree, and the cotton shrub are cultivated in some gardens, and, according to the opinion of good authorities, the pine apple would grow in the open country.

Italy.—The climate of Italy seems unfavourable to the invalid. This land of the Latins and of the myrtle is, however, exceedingly diversified. At Naples it is too hot and relaxing in summer, and Rome and Pisa appear more favourable residences. Of Naples, Mr. Matthews says, "Oh! this land of zephyrs; yesterday (Feb.), was as warm as July; to-day we are shivering with a bleak

easterly wind, and an English bleak frost. Naples is one of the worst climates in Europe for complaints in the chest, and the winter is much colder here than at Rome." Even the bay of Bäiæ, whither the luxurious and effeminate Romans resorted, though the bay itself be delightful and the tidal breeze fans its shore, is far too relaxing and unequal. The volcanic agency which is every where incessantly at work with its electricity, and temperature, and vapours of various kinds and hues, must combine to render that part of southern Italy insalubrious. The island of Ischia, in the gulf of Naples, has been pointed out as much preferable to Naples, or its immediate environs, and there are solid grounds for the election. —Rome and Pisa seem to be much extolled by Mr. Matthews: as he was an invalid he spoke feelingly, and on that very account, his evidence is valuable. "I believe," says Mr. Matthews, "that Pisa is the very best place on the Continent during winter, for complaints of the chest, and Nice perhaps the very worst. Pisa is situated in a low plain, its air is warm, mild, and muggy." "If there be any climate preferable to Pisa, it may perhaps be Rome, where the air is pure without being piercing." The annual fall of rain at Pisa has been estimated at a depth of 47 inches, nearly double that of our own climate, while its duration is not one-half. "The spring," says Mr. Forsyth, "is short, for violent heat generally returns with the leaf. In summer the mornings are intensely hot, and at noon the sea breeze springs up. The nights are damp, close, and suffocating when not ventilated by the *maëstrale.*" *

* Remarks on Antiquities, &c. 8vo. London, 1813, p. 29.

If the sea air disagrees with the patient, Rome and Pisa are recommended by Dr. Clark. At Pisa too the rocks are calcareous, and this may concur to render it less humid. The baths are truly delightful, and warm bathing has been recommended in Pulmonary Consumption. We remember to have visited a fine sulphuretted spring at a short distance, so that the patient has this additional resource. The Arno sweeps through the city and contributes to its salubrity; and yet Pisa, notwithstanding all these, is desolate and forsaken. Our residence at Pisa, however, was limited. Annoyance from musquitoes will be felt at Pisa, though not at all comparable with that at Venice, which we found so great as to abridge our sojourn.

During a four months' residence in Rome, we can attest the full enjoyment of health, though we cannot vouch so much for other parts of Italy; and though the climate is not what it was (as the historian has informed us) in the time of Julius Cæsar, when the Tiber was frozen, we have felt a keen frost, and even witnessed the "nivea Soracte" entitled by its mantle of snow to the adjunct applied in the olden time, when the phenomenon was less rare than now. The winter in the north of Italy, though not prolonged, is often very severe while it lasts; in Piedmont, for instance, the vines have to be removed from the poles which support them, to be prostrated in the dust; and at Turin the water in our room has been congealed in a single night to a solid mass of ice, and even the bottle broken by the expansion.

Switzerland seems but ill adapted to diseases of the lungs; the climate is exceedingly varied, and almost every modification may be obtained. The equality of temperature is liable to be disturbed or broken by gales

from the Alpine regions, chilled by the glacier or the snow plane, and rushing towards the spot heated by the sun beams. Thus the hills around Lucerne are seldom free from a sprinkling of snow during the entire year. Berne is perhaps too exposed, and Lucerne and Zurich too low and humid. Dr. Clark thinks the neighbourhood of Geneva the least exceptionable. Geneva, however, we humbly conceive to be far too low and humid for pulmonary diseases; and a physician of that city advised an individual, whom we knew personally, to move to Lausanne. Vevey is too hot during July and August, and Lausanne is much exposed to the north winds, and of necessity to sudden changes of temperature, though, as a whole, we should certainly much prefer Lausanne to any place we are acquainted with round the lake of Geneva. The following is a register of the temperature which we observed during our residence at Lausanne:—

THERMOMETER.

Lausanne, 1570 feet above the level of the sea, and 450 feet above that of the Lake of Geneva.

1825.			Fahr.
June 27	On the Lake of Geneva,	at 10 and 20′, a. m.	69°.5
—	Lausanne,	at 9 and 30′, p. m.	68
28	—	at 10, a. m.	67
—	—	at 10 and 20′, p. m.	70
29	—	at 9 and 10′, a. m.	65
—	—	at 9 and 25′, p. m.	63
30	—	at 10 and 15′, a. m.	63
—	—	at 10 and 25′, p. m.	64
July 1	—	at 9 and 30′, a. m.	65
—	—	at 9 and 45′, p. m.	63.5

1825.			Fahr.
July 2	Lausanne	..... at 10, a.m.	63
—	—	..... at 8 and 15′, p.m.	66
3	—	..... at 10, a. m.	63
—	—	..... at 8 and 30′, p. m.	66.5
4	—	..... at 10 and 30′, a. m.	65
—	—	..... at 10 and 10′, p.m.	62
5	—	..... at 7, a. m.	61
—	—	..... at 8 and 30′, p. m.	65
6	—	..... at 8 and 30′, a. m.	63
—	—	..... at 10 and 20′, p. m.	66
7	—	..... at 10 and 20′, p. m.	63
—	—	..... at 11 and 35′, p.m.	62
8	—	..... at 9 and 15′, a. m.	66
—	—	..... at 10, p.m. wet.	68.5
9	—	..... at 9, a. m. wet.	59
—	—	..... at 9 and 30′, p. m.	63
10	—	..... at 9, a.m.	62
—	—	..... at 8 and 30′, p. m.	67
11	—	..... at 9, a. m.	68
—	—	..... at 9 and 15′, p.m.	67
12	—	..... at 8 and 30′, a. m.	64
—	—	..... at 10 and 10′, p. m.	66
13	—	..... at 9 and 30′, a. m.	64
—	—	..... at 8 and 10′, p. m.	69
14	—	..... at 9 and 30′, a. m.	67
—	—	..... at 10 and 15′, p. m.	71
15	—	..... at 9, a. m.	68
—	—	..... at 9 and 45′, p.m.	73
16	—	..... at 8 and 15′, a. m.	69.5
—	—	..... at 9 and 15′, p. m.	74
	(In shade, 12 to 2, p.m. 86°)		
17	—	..... at 10, a. m.	73
—	—	..... at 7 and 45′, a.m.	75
	(In shade, about 2, p.m. 86°)		
18	—	..... at 9 and 25′, a.m.	77
	(In shade, about 2, p.m. 83°.5)		
—	—	..... at 9 and 40′, p.m.	72.5
19	—	..... at 9 and 30′, a.m.	74
	(In shade, at 3 and 30′, p. m. 84°)		

1825.			Fahr.
July 19	Lausanne	..... at 8 and 30′, p. m.	79
20	—	..... at 8, a. m.	74
	(At 3 to 4, p. m. 85°—at ½ past 6, p. m. 84°)		
—	—	..... at 10, p. m.	79
21	—	..... at 8 and 45′, a. m.	74
—	—	..... at 10, p. m.	75
22	—	..... at 8, and 45′, a. m.	71
—	—	..... at 11, p. m.	71

At Paris, on the 15th, at midnight, the temp. was 18° R. (72° F.) On 16th, at noon, 24.2 R. (86 F.)—at 1, p. m. 24.2 R. (86 F.)—at 2, p. m. 24.5 R. (87 F.)

Paris, 15th July, at 2, p. m. 23.3 R.—at 3, p. m. 23.4 R.

Guernsey and Jersey have been sometimes resorted to by invalids, and we believe with as much success as could reasonably be entertained; for the truth is that the specific climate which may suit one individual, may not prove sanative to another. Altogether independent of idiosyncrasies, or constitutional differences, the disease may have assumed diversified stages, or be modified by circumstances, and the type may be altogether different; for it must be acknowledged that the pathology of Consumption has not been so clearly defined or so much attended to as might have been wished: thus Tubercular Consumption has doubtless been often confounded with Phthisis pituitosa. Insular clime is often very much softened, and sudden transitions of temperature checked, under a latitude which would otherwise prove injurious by its severity. The Isle of Man, we believe, is considered a healthy climate; and we have seen the broad-leafed myrtle luxuriate in an exposed situation to the height of twelve feet, nor do we remember to have been told that it required any shelter whatever in the winter.

The Borromean Islands in the north of Italy afford similar illustrations, though on a small scale.

We should be afraid, if a residence in the south of England did not effect a recovery, when had recourse to in proper time, that one in the south of France or Italy would prove of little avail. Dr. Clark seems to point out the Isle of Wight as a desirable residence for invalids, while Dr. Harwood recommends Hastings. The coldest month in 1828, at Hastings, was February, with a mean temperature of 44°. The mean of the same month in 1826, was 43° 5. This is much in favour of the mildness of its winter. It appears to be tolerably sheltered from the N. and N.E. winds by the surrounding hills; its extent is however limited to a small local district. In January, February, and the Spring months, Hastings seems to possess an advantage over the other places on the S. coast, in warmth and shelter from cold winds, with the exception, perhaps, of Undercliff, in the Isle of Wight. During the autumn months, and even December, the climate of Brighton appears to be somewhat more warm and steady than Hastings. It appears, however, by Dr. Clark, that agues are not unfrequent about Hastings: he considers the climate of this part of the coast unfavourable to nervous complaints, and to those who are subject to head-ache and to languid and relaxed habits. Dr. Johnson observes, that the shores of Hants and Dorset are the most favourable retreats in Britain, "as being equally removed from the piercing easterly winds and rain-fraught gales from the western ocean, while a broad expanse of ocean lies in front. Penzance, however, appears to combine the greatest advantages which England can afford for the phthisical in-

valid." While neither the apricot, vine, nor green gage plum ripen their fruit at Penzance, the myrtle and the camellia luxuriate in the open air,—facts which prove at once a diminished solar temperature in summer and the mildness of its winter. The temperature at Rome, at 2 o'clock, P. M. is 7° warmer than at Penzance, but at 7, A. M. the latter is precisely of the same temperature as that of Rome.

From west to east we have Salcombe on the south-west coast, the "Montpellier" of Huxham, remarkable for the mildness of its climate, but too limited in extent. Torquay, Dawlish, Exmouth, Salterton, and Sidmouth are all in the same chain and line of coast, and resorted to, we presume, *cæteris paribus*, with equal advantage. The village of Heavitree, close to Exeter, has received the credit of possessing a mild winter atmosphere. As far, however, as our personal knowledge of Devonshire extends, we know no locality to which we should give the preference, in pulmonary diseases, to Moreton, a village about 12 miles from Exeter, on the borders of Dartmoor Forest. The ground in the vicinity is high and rocky; it is dry and well sheltered by surrounding hills, while it is freely ventilated by winds. There are few trees or brushwood. The rocks are granitic, and the Haytor granite comes from quarries in its vicinity.

To enter on the consideration of the various ingredients which constitute a good climate, would involve so many circumstances, and so broad a field of discussion, that a volume would be required for the exclusive theme, and after all, would be a mere "utopia," or the beau ideal of meteorology. Nor is it likely that such a clime as might be *constructed*, from elements scattered here and

there on the surface of the earth, can be any where found. Besides, after the *val paraiso* had been prepared, it would require homogeneity in its constitution to fit it for universal adaptation. The cloudberry, that luxuriates so well on the Alpine range, would perish in the valley; and the native of the plain would wither on the mountain top.

CHAPTER III.

TROPICAL, INSULAR, AND ALPINE CLIMATE—A MARINE ATMOSPHERE—THE SEA COAST—TOWN AND COUNTRY—INFLUENCE OF VEGETATION.

The salutary effect of a change of clime in Pulmonary Consumption will depend on a variety of circumstances, such as the constitution of the invalid and stage of the disease, with the specific kind of Pulmonary affection, as whether it belongs to that called pituitous or tubercular Consumption. On this question it must be acknowledged there has been much diversity and contrariety of sentiment and opinion. With regard to the influence of climate in disease, it should seem that Consumption seldom endures longer than three or four months in Italy. The physicians of that country say, that in every hundred fatal cases, one fourth are by pulmonary Consumption. M. Bayle states, that one fifth of those who die in the hospitals in Paris are of Phthisis. Dr. Gourlay, Dr. Gordon, and Dr. Heineker, give their united voice against Madeira; so does Dr. Renton, who states that, of forty-seven patients sent to the island, 32 died within six months after their arrival, six after a second winter's trial, and six after their return to England. In Madeira, it would appear that whole families have been occasionally swept away by pulmonary Consumption. Sir Alexander Crichton

objects to Dauphiné, together with a great part of the north of Italy, and almost the entire south of France. Dr. James Johnson and Dr. Sinclair have expressed a favourable opinion of Sicily and Malta. On the other hand, Sir Charles Morgan has advocated Italy, M. Portal the south of France, and Dr. Pugh has denounced Naples and Nice, though Hieres, in southern France, he considers the best locality for consumptive patients. It is impossible from these discrepancies to form a correct judgment; and when medical gentlemen are thus discordant, how can the patient be expected to form an accurate opinion?

A change of climate will act in some measure, no doubt, as diversity in diet does, on the system; by change of place there may be a change of density and of elasticity in the air. Its relation to moisture may be very different, and its electric character and condition perfectly novel compared with that to which we may have been accustomed—the very pathway, as to its absorbent or retentive character, may be possessed of meterological relations of a different stamp, and the breeze which fans the new locality may be more favourable than that pneumatic atmosphere from which the constitution has escaped, since a natural circumvallation may, by its check, as a barrier to currents, exclude such winds as might prove injurious, and yet leave it to be freely ventilated by the current which contributes to salubrity—there may in fact be

"Health in the breeze and shelter in the storm."

There can be no doubt that absence from scenes that fret, irritate, and tire, and an introduction to or ac-

quaintanceship with scenes and subjects of a different complexion, must contribute by their novelty and excitement to allay the fever of the mind, and remove one great obstacle to the remedial measures resorted to: and it cannot be denied that mental care and inquietude are not only great drawbacks to the full operation of medicines, but, in many instances, altogether counteract and defeat their efficacy. Still these are transient and subordinate. A mild and equable temperature, not liable to be ruffled by sudden incursions of change, and an atmosphere insusceptible of humidity, are conditions for which we should stipulate—neither a confined and stagnant atmosphere, nor one ruffled by the storm: the balmy breeze may still play freely, and yet not visit us too roughly. Where a mild winter reigns, the curative system can be pursued without limitation or interruption, and remedial measures thus prolonged may ultimately triumph, that might be altogether defeated by a brumal relapse. The transition from one sudden extreme to another, as from heat to cold, must predispose the system to pulmonary complaints. Mr. Edwards, in his reply to Dr. Beddoes, states that Consumption is rare in the West Indies, but that the natives are very liable to attacks of Consumption on coming to Great Britain. Considered analogically, we may suppose the converse of the position favourable to the check of pulmonic disease, and accordingly find that it is so. Since trees attract moisture, and some trees do this more than others, we had better not rear our residence under their shade, while a carpet of vegetation may at once cheer and enliven, and be the great means of sustaining a chemical as well as an electrical equilibrium. Our climate is one incessant circle of

change, characterised by vicissitudes of moisture and dryness, and rapid alternations of heat and cold. "Placed nearly," says Mr. Daniel, "in the centre of the temperate zone, where the range of temperature is very great, the atmosphere is subject on the one side to the impressions of the largest continent of the world; and on the other to those of the vast Atlantic Ocean. Upon their coasts the great streams of aqueous vapour, perpetually arising from the western waters, first receive the influence of the land, whence emanate those condensations and expansions which deflect and reverse the grand system of equipoised currents. They are also within the frigorific effects of the immense barriers and fields of ice, which, when the shifting position of the sun advances the tropical climate towards the northern pole, counteract its energy, and present a condensing surface of enormous extent to the increasing elasticity of the aqueous atmosphere." An escape from these contingencies is very desirable, where the question so intimately depends on the relations of the atmosphere to the organs of respiration.

The thunder-storm restores the disturbed equilibrium of the atmosphere. Intense and humid temperatures are extremely oppressive: the lungs do not play freely, and the system is overpowered by langour and lassitude; the thunders utter their voices, the lightnings play, and nature at length recovers from her swoon, and looks gay and cheerful again. A proper play of electric affinities will therefore be found intimately connected with a salubrious atmosphere—and in truth, when it glides freely along the nervous chord, its "discourse" is health. A gelid atmosphere, when charged with moisture, affects us deeply. "Gloomy November" invades the very vitals

of health. It is *moisture* which untwines the animal fibre, and disintegrates its cohesion. When similar diseases prevail over a vast tract of country, and occur simultaneously, it seems reasonable to attribute them to a common cause, and, as with epidemic diseases, they may very naturally be conceived to have their source in atmospheric influence. Local causes, no doubt, will give rise to specific effects, that may differ very essentially from those that are generally prevalent.

That the thunder-storm must necessarily exercise a considerable influence on climate, may be readily imagined when it is remembered that not only does it tend to promote a more equable diffusion of heat and moisture, and introduce nitrous acid gas to check the evolution of noxious miasmata by effecting their decomposition; but from some experiments made by Signor Libri, of Florence, on odoriferous bodies by currents of electricity, it may be inferred that the direct and immediate agency of the storm may be the destruction of subtile emanations. The elasticity of the atmosphere may be also materially affected, since ammoniacal gas may be expanded into double its former volume by a current of electric sparks passed through it.

The atmosphere consists of twenty-one per cent. of oxygene, and seventy-nine of nitrogene; and if the proportionals of oxygene and nitrogene be reversed, and the new measures be made to combine, *nitrous acid gas* will be formed. The Honourable Henry Cavendish, by passing a current of electric sparks through a quantity of atmospheric air imprisoned in a glass globe, soon obtained evidence of the production of nitrous acid, in the red fumes which made their appearance. It is then evident that

during every thunder-storm, a portion of our atmosphere will discover a similar change; the same agent, only on a more magnificent scale, is at work; the medium operated upon is identical, and the result must be similar. During the rain which falls in a thunder storm, we have repeatedly had unequivocal evidence of an uncombined acid—we think the *nitrous* acid—at least we cannot reasonably refer the phenomenon to any other. It is in this relation that we chiefly regard a tropical clime as successful in Pulmonic disease, whether there be an ulcerated tissue or an inflamed surface; for, in countries situated within the tropics, or verging on their confines, the atmospherical electricity is of a more intense kind and a higher character; and thus it is too in our own country, Pulmonary Consumption is not so rife when the electricity of the atmosphere is employed in distributing the elements of health, and preserving the equipoise of humidity.

It cannot, therefore, be a matter of any difficulty to account for the formation of *nitrites of lime*, &c. on damp walls, for this merely supposes the condensation by moisture of the nitrous acid, which in greater or less quantity is the offspring of every thunder-storm, or the immediate effect of atmospheric electricity: the subsequent decomposition of the muriate of soda, which acts hygrometrically and becomes deliquescent, and combination also with the lime, would form nitrites of soda and of lime; the muriate of soda is generally introduced by means of the sand employed in the plaster or mortar. M. Longchamp has endeavoured, and we think with success, to shew that nitric acid and its salts are formed independent of either animal or vegetable matter afford-

ing azote; and, that the elements of the atmosphere are exclusively concerned; while Gay Lussac as obstinately denies it, and considers that chalk and other calcareous matters contain animal matter, because such afford *ammonia* by distillation; and yet this celebrated chemist admits that nitric acid may, from some *unknown* cause, be formed independent of azotised matters, contending against its *exclusive* production in that way, and appealing to the aid which the saltpetre manufacturer receives from the addition of animal matter. We know an instance of a cellar in which this *nitrification* is so powerful, that meat exposed in it soon assumes the redness effected by the direct application of nitre. The following remarks, communicated by Mr. A., a gentleman resident in the "Potteries," and well informed in the statistics of that locality, remarkably corroborates our view of the effects of a peculiar atmosphere in Phthisis—it is substantially as follows:—As many perhaps die of disease of the chest in the potteries as elsewhere, being old residents or natives; yet strangers coming there find benefit in such cases. Such is the general benefit, which he does not attempt to account for, but states that the air is *impregnated with an acid*, discernable in the rain water, and which, on being analyzed, proved, according to him, to be the *sulphurous acid* carried up with the vapour of coal burnt in the potteries. Now, the direct tendency of nitrous acid is *antiseptic;* it will, therefore, destroy those vitious germs in the air which might irritate or inflame; hence such an atmosphere will be purer and better adapted to the requirements of healthy respiration: it also checks inflammatory action, and heals an ulcerated surface, and if brought in contact with diseased lungs, through the

medium of respiration, its office is obvious enough. It will be remembered that Dr. Carmichael Smyth received a remuneration from Parliament, for the employment of nitrous acid gas in the arrest of contagion. The phenomena of the thunder-storm is of a piece with this, and reflects a light upon the measure adopted by him.

Insular clime will be effective in the ratio of the extent of surface circumfused by the ocean, and its flatness or bold and rugged features. If studded with extensive woods, an insular climate may be a very humid one, for trees attract, retain, and condense moisture; and the proximity of that vast reservoir of waters which surrounds it, affords by evaporation—a process incessant in its operation—a continuous supply: this contributes to the humid atmosphere which reigns too constantly "lord of the ascendant." The sea and land breezes will of necessity be more constant and equable, and the extremes of temperature will not be seen in such sudden starts as elsewhere. The sea preserves a remarkable uniformity of temperature, and that of winter, compared with summer, is not separated by such extremes as the air which broods over an inland surface. Seeing, therefore, that the air incumbent over the ocean will necessarily participate in its uniformity, that floating over a small island will feel its influence, and, except when the atmospheric wave from a distant source visits its shore, its climate will present a tolerably uniform temperature; because when the air incumbent over the land is overheated, the marine atmosphere will rush in to restore the balance, and support the equilibrium. In the vicinity of Marseilles, Dr. Raymond found the land often heated to 160° F., but the temperature of the

sea never rose above 77°. In winter, he found the earth lowered down to 14°, but the sea never under 44°. Ranges of hills will tend very much to disturb this equipoise; and rivers will also concur to form a channel for the breeze; the absorbent capacity of the rocks and soil will also materially influence the question, and the degree of opacity which their surfaces present, will, in like manner, affect the insular temperature. It is obvious that, if we except these accidental circumstances, an insular clime, as far as temperature goes, should be tolerably uniform, and present a desirable locality for pulmonic disease. But we conceive that Pulmonary Consumption has much to struggle with in reference to humidity; and, from preceding observations, woods and rocks condense atmospheric moisture. In proof of these remarks, we have only to look at the cloud-capt rock, for such elevations exercise a mighty agency in attracting and discharging clouds, the great reservoirs of moisture. In our Treatise on Atmospherical Electricity, we have mentioned some remarkable facts connected with the relation of trees to moisture, and of considerable importance in the natural history of climate.

The influence of trees on climate is indeed great: they attract or condense vapour, and even in regions doomed to arid sterility, a perennial verdure may be found in their vicinity. From cutting down the woods, many brooks in Kentucky fail in summer, and in New Jersey streams have been entirely dried up. Extensive woods may render a climate very humid that might otherwise be parched with drought. All trees, however, do not act alike in this respect.

Alpine climates are very variable, and at every

advanced plane of elevation, there is a different density and range of temperature and humidity, while the atmospherical electricity varies in degree, and is changed in kind. In the plain we may gather the grapes of " Eschol," where the pomegranate matures its fruit, and the almond tree flourishes; while a few short hours' walk introduces us to regions of snow and thick-ribbed ice; and should we desire to nestle in some dell or defile among the mountains, the genial atmosphere might be chilled by the cold blast, wafted from mountains of snow, or glaciers "pinnacled in cold sublimity:" perhaps, too, we and our reveries might be buried together by an avalanche hurled headlong from the Alps, or some mountain-slip, that might bear us away and overwhelm us with its ruins. As to the vallies in such countries as Switzerland or Savoy, it is not conceivable that where Bronchocele is endemic, it can be considered eligible for Pulmonary Consumption. On the other hand, though we cannot see how Alpine regions could thus benefit the invalid, in reference to a permanent abode there, we are strongly of opinion, from our own personal observations, that to rusticate in some hollow, in a sheltered ridge on the mountain acclivity, for a short period in summer, might be attended with good effects; but locomotion will be found most beneficial, and to undulate from the mountain to the valley may impart fresh vigour and brace the frame anew. When we compare the hardy features and brawny muscles of the Alpen Jäger with the sallow, haggard countenance of the inmate of the Pontine Marshes, on the plains of Italy, we soon become sensible of the difference between a stagnant dense atmo-

sphere, loaded with vapour, and a bracing, elastic, and dry medium, dimished too in density, and necessarily also in pressure. It has been said that the mountain tenantry are not free from Pulmonary attacks, and hence it is inferred that a residence among the mountains is not desirable. The same objections may be urged against Penzance and Malta; for Consumption may be found located in both. Besides, all this will entirely depend on the altitude of these ranges; for though in the mountains in this country, which rise to no great elevation, the surrounding atmosphere may be saturated with humidity, and clouds encase them, the greater elevation of the Alpine range presents a very different train of phenomena; the stratus form of cloud may be reposing at the base of the mountain, and a brilliant sky be discerned from its summit, and what falls on the mountain top as snow, may assume the feature of a deluge of rain in the plain: we may, therefore, it is obvious, rise above the vapour plane and defy its influence. Alpine weather is subject to very sudden changes: thus M. de Luc's hygrometer has announced extreme dryness, and on a sudden become bedewed with moisture. Sometimes the coming storm is announced to the hunters by the sudden trepidation and flight of the chamois, which congregate often in herds of forty or fifty together. It may be observed in this place, that radiation is not so great from an inclined plane, *cæteris paribus*, as from a horizontal surface; this being the case, the inclined sides of the mountain range will not be so chilled as the surface plane of the valley, the consequence of which is, that the vapour precipitated from the atmosphere will be more copious and dense in the plain than on the sides of

the hill: on great elevations no dews form, because the air is there void of vapour chemically suspended in it, and the point of saturation is not reached. A north and south aspect will also much modify the circumstances.

The valley environed by hills of inconsiderable altitude will, consequently, be more susceptible of the effects of radiation than the latter can be; and hence it is notorious that dew and hoar frost are more abundant in the plain than on the summits or acclivities of hills. This circumvallation, by promoting the tranquillity of the air incumbent on the surface of the valley, will in like measure aid the process of radiation. Radiation goes on, doubtless, on the slopes of hills; but by a statical law, the mass increased in density by condensation will sink into the valley, and repose at the foot of the mountain. It has been long remarked that the malign effects of cold, and the injury it inflicts, occur in hollow places, sheltered from the usual contingencies of sharp winds and other adventitious sources of cold; while the steep, visited by cold currents of air, presents no such injurious effects of cold. Mr. Daniel states that he has seen a difference of 30° on the same night, indicated by thermometers placed under these various circumstances. This is certainly a very extraordinary difference, but we cannot doubt the fact when stated by so accurate an observer.

A marine atmosphere has not been duly estimated, and we suspect that the sea voyage has as much to do in restoration as the climate. Though a change from a warm to a cold region be one in every respect fraught with danger to the invalid; yet it is notorious that a voyage—for instance, from Britain to St. Petersburgh, will prove exceedingly beneficial. Dr. Clark says that

the West India Islands are too hot for invalids that are Consumptive, and that the Azores, Bermudas, and Bahamas are all inferior to Madeira; but it is a fact, that individuals have been benefitted by a voyage hither. It cannot well be considered as proceeding from any thing like a reaction in the system, from nausea or sea sickness, as benefit has accrued in cases where neither the one nor the other has occurred. Dr. Clark seems to think a sea voyage, in early stages, when the disease is accompanied with hæmoptysis, beneficial; and, if we understand him aright, he places the chief, if not entire efficacy, in the *motion* of the ship, and fences his own opinion by a similar one entertained by Dr. Gregory, assimilating this continued motion to constant exercise, while it also acts on the nervous system. He gives a preference to the Atlantic over the Mediterranean. We cannot see the force of this reasoning, though ingenious enough; for gentle exercise on land has produced no benefit whatever, where a sea voyage has done much good. It is well known that small doses of Ipecacuanha have, when exhibited in an early stage of Consumption, effected benefit; and though a sea voyage may in some cases act on the same principle, and, by producing nausea, have a good effect, the chief advantages will be found, we believe, in the uniformity of the atmosphere incumbent over the sea, which also sustains a comparatively constant and uniform hygrometric character. The non-occurrence of abrupt alternations of temperature, and the presence of muriates and hydriodates which a marine atmosphere is known to hold in solution, must not be overlooked in the estimate. The sanative effects of salt water, when applied to cuticular excoriations, &c.

are admitted, and we cannot deny a similar action on the ulcerated lungs, when such an atmosphere is, in the act of respiration, brought in contact with them. Vogel and others have clearly proved that the atmosphere incumbent over the ocean contains muriates in solution, and the very attenuation which attends their wide diffusion through the air, would afford more ready means for its introduction by respiration. In the Mediterranean we have often determined the fact, and during a perfect calm, on the Breakwater in Plymouth Sound last summer, our experiments detected in the incumbent air carbonic acid, muriates, bromine, and iodine. Our method was to empty a flask (previously filled with distilled water), with the exception of two or three ounces, and repeatedly, for a continued period, agitate the included atmosphere in contact, opening the flask at intervals for a fresh accession, and then apply the usual tests. This being evident, the benefit of a sea voyage is no longer a problem, and though the seas of temperate climes may prove beneficial, it is obvious that those of tropical regions, from the more brisk evaporation, and consequently more constant and continued accession of saline matter, will be proportionably more sanative. It is generally believed that "colds" are not so readily caught at sea, even though the sea spray may drench the individual; and this position, which is granted, is easily explicable, when we consider that the system cannot be so chilled by evaporation as must be the case generally on land, because the hygrometric state of the atmosphere would considerably modify this process. That muriates are contained in a marine atmosphere, is evident from the *rust* which encrusts the iron furniture of a ship, even

below deck, and chemical means will detect muriate of iron in this rust. It is known that if a bit of cloth or sponge, previously well washed with fresh water, be hung up, between decks, it acquires a salt taste. Mr. Wilson* says, "we have known an instance where a person soon got well at sea; but by residing on land the complaints returned, and on going to sea were again removed."

The electric state of the medium in a marine atmosphere will also be much more equable, and less susceptible of vicissitude; and, according to Mr. Black, winds or currents of vapour of some continuance from an extent of sea are negatively electrical, while those from the land, especially from hilly districts, are relatively invested with positive electricity. These remarks apply to observations made in the Mediterranean. In the middle of the Atlantic Ocean lightning is seldom seen.

The influence now stipulated will be found more or less effective in the atmosphere of the sea-coast; for there the air will be charged, in a greater or less degree, with muriates. Hence black hats and clothes lose their dye, and become brown from the decomposition of the dye (gallate of iron). The muriate of iron will be formed at the expense of the chemical decomposition of the black dye, on the principles of complex affinity. It has been said by Dr. Harwood, in his remarks on the climate of the southern coast, that animals thrive where vegetables decline, and this consequently happens on the sea coast. This is rather a sweeping generalization, because the rule will by no

* Observations on Climate. p. 221.

means hold good; it altogether depends on the prevalent winds to which the vegetation on the sea coast is exposed. Thus Von Buch says that where neither the spruce nor pine thrives, and vegetation is at a low ebb, man seems equally defective. The fact is, we are convinced that the sea air very materially influences the effects of radiation. Crops on the sea shore, such as barley, are sooner matured than inland crops; and, while intense winter frosts utterly destroy inland vegetation, those on the borders of the sea will escape and outlive the severest season. We have now a luxuriant plant of the *Phormium tenax*, or New Zealand flax, that has outlived four winters on the sea shore, and has never been protected in any way; and have also heard of a double flowering camelia, similarly circumstanced, as far north as Inverness, which has always flowered well: the orange, the fig, and pomegranate will flourish better on the coast of the Mediterranean, for instance, near Genoa, than on the fertile plains of central Italy.

M. Bayle, observes M. Laennec, having recorded, in his researches on Pulmonary Phthisis, the case of an individual who had all the symptoms of Pulmonary Consumption, even in the last stage, as completely cured by change of air and removal to the sea coast; and the cure of genuine Phthisis appearing to him an event altogether impossible, it was finally inferred to be a case of simple chronic catarrh: the real state of the case, however, was ascertained by the application of the Stethoscope. " J'ai acquis depuis la certitude qu'il y avait eu chez ce malade quelque chose de plus qu'un catarrh; J'ai eu occasion de le revoir in 1818; J'ai exploré sa poitrine avec le cylindre; J'ai trouvé que la respiration

s'entend parfaitement chez lui dans toute l'étendue de cette cavité, excepté au sommet du poumon droit," &c.* He hence infers that this portion of the lungs had been the seat of an ulcerated cavity, afterwards supplanted by an entire and solid cicatrix. It appears that this person is now *Procureur du roi* in one of the provincial tribunals, and often speaks for an hour together without fatigue: this fact is highly favourable to a judicious migration to the sea coast in Pulmonary Phthisis.

The difference between the salubrity of the country and the town is palpably seen in the florid, healthful, and happy countenances of the rustic and the villager; and yet it is equally true that the chemist is unable, with all his eudiometry, to detect in the incumbent air any difference between the one and the other. But there are subtile agents at work which his apparatus can neither catch nor confine. The gases may be considered the same proportionally, in some measure; but a closer inspection will, perhaps, even yield evidence of a check to the evil agency of a gaseous product, which, if in excess, would destroy, and even in inconsiderable quantities must prove more or less injurious; besides this, the unventilated atmosphere of large towns, loaded with an excess of carbonic acid, a due admixture of coal gas and fuliginous vapours, and the effluvia of sewers and drains, *et hoc genus omne*, must supply such *lædentia* as to make it matter of wonder how the organs of respiration can be assailed so long with impunity. Not to mention that the rural retreat is free from all these rude injuries, the country superadds the influence of healthy

* "De L'Auscultation Mediate," Vol. I. p. 112.

vegetation, which, besides its electric and hygrometric functions, pours out on the atmosphere floods of oxygene to neutralize the excess of carbonic acid gas arising from respiration and combustion.

That plants do meliorate the atmosphere contaminated by the respiration of animals, seems very evident; and though some, and, among others, Mr. Ellis of Edinburgh, have endeavoured to prove the contrary, we imagine that a very different view of the case can be substantiated by facts. Dr. Priestly conceived that leaves imbibed carbonic acid gas by their upper surface, and evolved oxygene by the under surface: Ingenhouz discovered that light was essential, while plants gave out carbonic acid gas by night; and Sennebier found that the quantity of oxygene was in some corresponding ratio with the volume of Parenchyma. Those who have taken opposite views have apparently overlooked the influence of aquatic vegetation, such as the water lily, pond-weed, and others; and we believe it is tolerably well ascertained that fish thrive better in ponds mantled with aquatic vegetation than when naked. Gay Lussac seems to have ascertained that the air in water contains 32 per cent. of oxygene, while atmospheric air is known to contain only 21 per cent. The conferva rivulosa and others display by the silver air bells which attach to their grass-like stems the evolution of oxygene, and the conferva bullosa receives its specific character from the vesicles inflated with oxygene, that buoy up the plant on the surface of the water. Sennebier found that plants watered with carbonic acid gas respired an extraordinary quantity of oxygene; and Ingenhouz in one experiment discovered, that a vine-leaf placed in an ounce phial of car-

bonic acid gas in the sun beam without water, changed it in an hour and a half to pure oxygene. In experiments where imprisoned vegetation was watered with carbonic acid gas held in solution, Sir H. Davy found that the air became eudiometrically pure. An officer of rank, long in India, informed us that he had always found the land breeze 4 per cent. purer than the sea breeze.

It is readily conceded that carbonic acid evolves from plants at night, and that while the exotics of the conservatory may prove, if introduced into the drawing-room, salubrious by day, they must be noxious at night: still the ratio must be widely different in these cases; and if the carbonic acid gas evolved at night had any correspondence with the amount of oxygene emitted by day, it may reasonably be asked, whence comes the carbon essential to the ligneous structure of the plant, and which forms so vast a proportional of the mass? Besides, the carbonic acid which evolves at night will, from its superior specific gravity, being cooled, fall on the earth and be absorbed; and that which transpires from the leaf, being condensed still further by the night dews which fall, will trickle to the ground, and water the earth with that which appears to be taken up by the roots of plants: thus the atmospheric salubrity will scarce be disturbed by the carbonic acid gas which transpires at night. But it must not be forgotten that animals expire this deleterious gas by *day* as well as by night; and as it must be considered to be chiefly destructive to respiration during day, when its buoyancy is determined by temperature, it is at this precise period that vegetation interposes, and by its surplus of oxygene, restores the equilibrium, and reciprocates the compensation essential and required. When

our fields and forests are denuded, salubrious breezes, borne from tropical lands, and a perennial vegetation will supply the want we feel, though the desideratum will be less from the increase of cold, which will proportionally check its diffusion and diminish its buoyancy. This reciprocity between the animal and vegetable kingdoms is not the least of the wonders which invest the creation, and excite our admiration of its almighty Author. Neither the one nor the other can therefore say to his fellow, "I have no need of thee." The plant purifies what the animal poisons; what the animal elaborates, sustains the plant in healthy vigour; and, in grateful return, it yields for every measure of carbonic acid an equivalent one of vital air. When we contemplate the picture drawn by the sacred historian of the sublime *hexäemeron* of creation, we shall find that the surface of the ground had become instinct with botanical glories, and the sun too had played on the leafy scene, before animal life had yet breathed either by lungs or gills; the counterforte and antidote were prepared before the poison had been elaborated.

CHAPTER IV.

CHEMICAL CONSTITUTION OF THE ATMOSPHERE—PHENOMENA OF RESPIRATION—ARTIFICIAL ATMOSPHERES—THEIR EFFECTS—OXYGENE—NITROUS OXYDE—CHLORINE—NITROUS ACID GAS.

The atmosphere which sustains respiration is a compound aërial medium: its proportional constituents, chemically considered, are twenty-one per cent. of oxygene, and seventy-one of azote or nitrogene, which last is the base of nitrous and nitric acids, as well as of some compound elastic gases. To these must be superadded one part in 600 to 1000 of carbonic acid gas, according to Sir Humphry Davy and Mr. Dalton; others have stated it to form a greater proportional, and this variability would seem to substantiate the belief that it obtains in the character of a mechanical mixture, rather than existing in amospherical air as a definite chemical ingredient. On the other hand, when we consider its great specific gravity, we find not a little difficulty in this supposition, since atmospheric air, compared with carbonic acid gas, will be as 1000 to 1500. That atmospheric air does contain carbonic acid is clearly proved in the opaque pellicle or film which pervades the surface of transparent lime water when exposed to atmospheric influence; and this phenomenon has been noticed in frigid, temperate, and tropical regions, in every season, and at different elevations. Theodore de Saussure found carbonic acid gas on the Col de Geans and on the summit

of Mont Blanc; and Humboldt on the highest elevation he attained on the acclivity of Chimboraço, the highest of the Andes. We have, in numerous experiments, determined its presence on the loftiest eminences of some of the Passes of the Alps—the Great St. Bernard, Simplon, and Mont Cenis. We have also found it in the atmosphere incumbent over the Break-water in Plymouth Sound, and that of the Mer de Glace, near the lofty glaciers of Talefre. Theodore de Saussure made some experiments at Chambeisy, about three-fourths of a league from Geneva, and six-teen *metres* above the lake; 10,000 volumes of air contained 4,15 of carbonic acid gas, as the mean of 104 experiments made, by day and night, at all seasons: the air was taken at four feet above the surface: the greatest quantity of carbonic acid gas appeared to be 5,74, and the least 3,15.*

We have already stated the chemical parts of the atmosphere, irrespective of carbonic acid as an ingredient; and these proportionals are found invariably every where, unchanged by any vicissitude, and unaltered by any alternation. A portion of atmospheric air, brought from the Coast of Guinea, eudiometrically examined, discovered the same ratio as that obtained from over the island of Britain. Whether on the sea-coast, or inland, at whatever season or period of the day, independent of barometrical pressure or thermometrical change, the relative ratio of any specific quantity will be still the same. Gay Lussac, in 1805, attained in his balloon an altitude of 21,750 feet, and brought down from that

* Bib. Univers. June, 1830.

elevation a portion of atmospheric air: this when analyzed discovered the same relation of chemical structure. We should certainly infer, *prima facie*, that the atmosphere is unquestionably a distinct and definite chemical compound; and yet some have asserted that it is a mere mechanical mixture: the relative specific gravities of oxygene and azote are 1,1111 and 0,9722; and, as far as this determines the question, taking also into consideration the invariable and unchangeable proportions in which they are found united, we are inclined to consider that the testimony is in favour of a definite chemical compound. On the other hand, Mr. Dalton's experiments clearly prove, that elastic gases, in contact and incumbent, mix together or mutually penetrate. If the invariability of these definite parts, however, be rejected as a proof of their chemical constitution, we have no evidence for the chemical structure of any compound gas whatever, since we give up the only test which can determine the question. It is not denied that gases can and do mingle together; but if the link of union be a mechanical attachment, how comes it to pass that it possesses all the determinate features of chemical affinity? The most curious example of the transit of a gas by the orifices of organic tissues, is what takes place when a bladder, containing a small quantity of hydrocarbonate, is suspended in a vessel of carbonic acid gas: the bladder, flaccid at first, gradually expands till it at length bursts. We found a similar transit, by interposing a fine membrane between two elastic volumes of hydrogene and carbonic acid gas, contained in glass cylinders, and incumbent over each other. Caloric acts an important office, but will scarcely account for the invariability of

parts in atmospheric air. A reversal of these proportionals, still preserving the same constituents, would form *nitrous acid gas*, or aquafortis! a fact not the less true because it is extraordinary, and exhibits a proof how very soon a blessing might be converted into a destroyer. From these remarks it is obvious, that however the atmosphere may affect the living functions, no blame can be charged on the chemical constituents of the atmosphere, and the question of inquiry is only to be considered in relation to the moisture it may contain, together with its electric and thermometric character, and the heterogeneous materials that may be mixed with it.

Respiration is one of the most important functions of animal life; and, whether the mechanical structure of the Pulmonary apparatus, or the chemical effects produced by their action be considered, the phenomena are interesting, curious, and wonderful. It is, however, only the chemical relations which principally affect the present inquiry. The commonly received doctrine is, that at each inspiration a portion of atmospheric air passes into the lungs; being introduced into the air cells, and brought in contact with the blood, the latter is depurated, yielding up its superabundant carbon to the oxygene, which, being thus changed into carbonic acid gas, is expelled by each succeeding expiration, and this newly-formed feature is at the expense of a definite proportional of oxygene, which disappears, the carbonic acid being an exact equivalent for the volume of oxygene which is thus eclipsed. From this view of it, as generally entertained, we are entirely dissentient. Nothing is more decidedly proved, than that in the process of respiration an equivalent volume of carbonic acid gas is

returned for that of oxygene; but we cannot so well understand how the combination of the carbon of the blood with the oxygene of the atmosphere should be so instantaneous and complete with the intervention of a delicate film between them: though we can at once conceive the complete interchange through such a tissue, of oxygene absorbed by the blood, and carbonic acid gas evolved in return. In respiration, the amount of the volume of the newly-formed carbonic acid gas is from $4\frac{1}{2}$ to 8 per cent. of the whole elastic mass, which, however, as Dr. Prout has shown, is modified by circumstances. The quantity of carbonic acid gas is diminished, for instance, when mercury or spirits have been used. It varies before and after meals, and differs at night compared with day. The experiments of Dutrochet and others serve satisfactorily to elucidate the point. The existence of carbonic acid gas in the blood has long been clearly proved. Dr. Edwards,* whose experiments on respiration are extremely interesting, states that carbonic acid gas does not form instantaneously in the lungs through the medium of respiration, but that it is secreted from the blood in the respiratory organs. We are far from thinking his experiments conclusive, because they were made on cold-blooded animals, placed in an artificial medium of pure hydrogene. Under such circumstances, however, by sustaining the process of artificial respiration, carbonic acid gas was excreted, nearly equal in quantity to what had taken place in atmospheric air. We made an experiment which goes far to prove the condition for which we contend: recent venous blood at

* Revue Medicale, Aôut, 1823.

98° F. was inclosed in a tube formed by a portion of the allantois of a calf, and the tube being plunged into a medium of oxygene, an absorption of the gas took place, the blood became florid, and the ambient medium, in process of time, evinced distinct and unequivocal traces of carbonic acid gas. Dr. James M'Donnel, of Belfast, who has for many years made experiments on numerous individuals in health and disease, adults and young, and at various periods of the day, informed us he had found considerable uniformity in the results, cæteris paribus, with the exception of females *enceintes*, in which in the earliest stage a remarkable excess of carbonic acid gas was determined,—a fact which powerfully corroborates our view of the phenomena,—because the increased aëration of the fœtus demanded the condition. It is obvious that these views being sustained, the maintenance of animal temperature cannot be explained, according to the views of Crawford and others, on the principles of latent caloric; we are entirely of opinion with Mr. Brodie,—whose experiments we have considered satisfactory and conclusive, and therefore accept his verdict as confirmed—that "animal heat is in some way or other, dependent on the integrity of the nervous system." Thus, though artificial respiration was kept up in an animal that was decapitated, no heat was evolved. "By the conversion of a great portion," says Dr. Carson, in an ingenious paper on animal heat,* "of the inspired air into the liquid form in the lungs, it is easy to suppose that too great a quantity of heat might at once be disengaged. But the synchronous formation of gas in the

* North of England Medical Journal.

pulmonary arteries is calculated to employ the excess of heat which might thus be generated in the lungs. The lungs, therefore, act in a double capacity, as a furnace, to supply heat when it is deficient, and as a refrigerator to remove it when it is excessive."

A halitus, or aqueous vapour, is also in the process of respiration secreted from the mucous membrane of the bronchia, and accompanies the evolution of the carbonic acid gas, residual oxygene, and unchanged measure of azote. By the action of the lungs the functions of the heart are put in motion, and with it the machinery of circulation; and the venous blood, dark in colour, being transported to the lungs, gives up its excess of carbonic acid gas, receives in return an equivalent balance of oxygene, and, flushing with a vermilion dye, becomes arterial blood, and circulates again. As far as we can trace the phenomena, the azote serves the purpose of a diluent, or corrective, to the too stimulating power of the oxygene with which it is associated, since experiment has not determined that any change or absorption takes place; and yet we suspect that a new chemical combination may be formed by another ratio of proportionals, and thus act in some yet undetermined character. The increased pause which takes place in the process of respiration, between the period of the expulsion of its produce and the moment that a fresh inspiration is made, is very remarkable and full of interest; it is sufficient to allow the ascent of the azote and descent of the carbonic acid, agreeable to their respective specific gravities, and thus permit, in the subsequent inspiration, an uncontaminated influx of atmospheric air: this prolonged pause we are generally unconscious of, and its periods are

repeated without consultation. In no department of animal physiology are more wonders revealed than in the conjoined functions of respiration and the circulation of the blood. The mechanism of the nerves is more occult, and their operations more mysterious and subtile. The process of digestion seems to be subordinated to the influence of nervous agency; and we think that the experiments of Dr. Wilson Phillip and Mr. Broughton go far to prove that, if the power resident in the nerves be not the principle of voltaic electricity, it is very similar to it, and exercises analogous functions: the evolutions of heat and processes of digestion are precisely the operations that such an agent is capable of performing. It is of the first importance that we should clearly understand the phenomena of respiration, and the changes superinduced on the blood by aëration.

Dr. Hales calculates the number of respirations in a minute to be twenty. Dr. Menzies breathed only fourteen times in this period. Sir H. Davy estimates his respiration at about twenty-six times in a minute, while Dr. Thomson states his at nineteen. *Twenty respirations* in a minute may be justly assumed as the average.

Dr. Menzies estimates the quantity of air inhaled at each inspiration at forty cubic inches. Allen and Pepys state it to be 16,5 cubic inches, in an ordinary inspiration; while the expiration is calculated, in a case of slow and full breathing, at 61 cubic inches. Dr. Bostock presumes that about forty cubic inches are inhaled or expelled in the act of respiration. *Forty cubic inches* may be concluded on, as a near approximation to truth.

Dr. Godwin infers that the mean quantity of air remaining in the lungs, after expiration, amounts to 109

cubic inches. Menzies states it to be, after an ordinary expiration, 179. In the same circumstances, Sir H. Davy estimates it at 118 cubic inches. Allen and Pepys found nearly 100 cubic inches of air in the lungs after death, being an average of 126,5 cubic inches, to which Sir H. Davy's estimate is a near approach; and 120 cubic inches may be safely considered the general average.

From the experiments of Menzies, Crawford, Davy, Dalton, and Allen and Pepys, it seems to be clearly ascertained, that for the oxygene of the atmospheric air which has disappeared in the act of respiration, *an equal volume of carbonic acid gas* has been substituted, amounting, according to the experiments of Messrs. Allen and Pepys, to *about* 27,5 *cubic inches per minute.* Dr. Prout has deduced the mean or average at 3,45 per cent. of carbonic acid gas.

Dr. Hales estimates the quantity of *aqueous vapour* emitted in respiration, at 20,4 ounces per day, and Dr. Thomson at nearly 19 ounces.

Sanctorius used to weigh himself, in order to calculate the loss sustained by the system at different periods. This loss is not by any means equable, since it is variable both by day and night. The causes are very diversified: temperature, pressure, moisture, and dryness: a tranquil or agitated atmosphere, and light and electricity, may be superadded to these.

Artificial atmospheres, in relation to respiration, form a subject of great interest in Pulmonic disease, and constitute a question of the very first importance. There are not many of the gases that can be inhaled, even for a short time, without admixture with others. Nitrogene is utterly irrespirable, except in combination with oxygene,

forming, for instance, the protoxyde of azote or nitrous oxyde. It may be respired, and its effects are very extraordinary.

Oxygene was discovered on the 1st August, 1774, by Dr. Priestly, and by the Swedish chemist, Scheele, about the same time: it is a permanently elastic gas, similar to atmospheric air, of which it forms a part. When inflammable bodies are set on fire and plunged into this medium, such as charcoal, sulphur, or phosphorus, they burn with increased intensity and splendour, and when bodies absorb it, they assume an earthy appearance, or become acid, &c. This gas, when made to impel the flame produced by burning spirit of wine, on the diamond, is found sufficient for its combustion; and when a series of jets are thus directed from various points of a circle surrounding a ball of quick-lime, placed in the centre, an intensely brilliant light is obtained. This artificial illumination has been found serviceable in the measurement of the base of the triangle in the grand trigonometrical survey, and might be eminently useful in telegraphic communications by night; the periods of intermission employed would form a very simple cypher. We can have no doubt that this light could be descried by a good telescope at a distance of upwards of a hundred miles. Oxygene is a fraction heavier than atmospheric air, and there are few bodies into which it does not enter as a constituent part. It seems clear from the experiments of Count Morozzo and others, that it is quite unfit for respiration. Birds and other animals quickly die in oxygene, and it is remarkable that the gas is scarcely deteriorated by animal respiration; no other

proportions whatever than those we find in atmospheric air, of oxygene and azote, would support a continuance of healthful animal life. This gas is obtained in its purest form by exposing the chlorate of potassa to the action of heat, in a small glass retort over the flame of a spirit lamp, and receiving the gaseous product over water.

We have the following interesting case stated in Professor Silliman's American Journal:—A young lady, apparently in the last stage of decline, and supposed to be affected with hydrothorax, was pronounced to be beyond the reach of ordinary medical aid, when it was determined to try the effects of oxygene. The gas, it appears, was obtained from nitre, or nitrate of potassa, not because it was best suited, but because it was most convenient: of course the gas so obtained must have possessed a variable portion of nitrogene or azote—perhaps seventy to eighty per cent. of oxygene, and twenty to thirty of nitrogene. This being the case, in all probability the latter may have very materially influenced the results, and the produce of nitrous acid in the bronchia have resulted; and it might be cited as a proof of the efficacy of our plan of treatment, in the use of an atmosphere impregnated with nitrous acid gas. However, the detail states that the gas was skilfully prepared and carefully administered; and it appears that, contrary to all expectation, the difficulty of breathing, and other oppressive symptoms, were speedily relieved,—the lady grew rapidly better, and in a few weeks entirely recovered her health.

Nitrous Oxyde, or protoxyde of azote, was discovered by Dr. Priestley, in 1772. Its constituents were first pointed out by the Dutch chemists, and its peculiar pro-

perties, in reference to respiration, investigated by Sir H. Davy in 1799. When nitrate of ammonia, in a solid or crystalized form, is subjected to a temperature of 300° to 500° F., the gas distils over, and though it is slightly absorbable by water, it may be collected over its surface. It is quite transparent and invisible, except when combined with aqueous vapour, in consequence of a too rapid evolution proceeding from an increased temperature, when it assumes the form of a white cloud, which however soon condenses. In this gas, as in oxygene, there is an increased intensity of combustion when inflammable bodies previously ignited, are plunged into it. Inflamed sulphur and sulphuret of carbon exhibit a beautiful rose-coloured fringe. Sir H. Davy first made us acquainted with the extraordinary powers it possesses in respiration, when three quarts to a gallon or more are inhaled: we have given to the amount of two gallons of this gas to an individual, but are decidedly inimical to its frequent, general, or indiscriminate exhibition: indeed, we doubt the propriety altogether of exhibiting the gas, excepting under peculiar circumstances. Some, indeed, make no scruple of giving it on every occasion, and to any individual who may rashly offer to take it; but it has produced a temporary madness, and transient apoplexy, and where there is any determination of blood to the head, its exhibition might prove fatal. Prudence and caution, indeed, should attend its administration in all cases. While under its influence "the objects," says Sir H. Davy, became bright and dazzling, and my hearing more acute." Southey describes its effects as a passage to Heaven highly pleasurable, attended with a peculiar thrilling. In an ecstacy of delight, he has at-

tuned his lyre in its praise, and considers that the celestial atmosphere must needs be compounded of it. Dr. Beddoes said that since he inhaled it his morning alertness equalled that of a healthy boy, and it might even make us wholly dispense with sleep. M. Pictet declared that his head appeared to be thrice its usual size. "I believed," says he, "I had quitted this world, and was floating in the empyreum." In truth its witchery exceeds by far the phantoms of the opium eater, and all his imageries and enchantments. It generally leaves no lassitude behind, and in this differs essentially from other stimuli. It had a most extraordinary effect on a gentleman to whom we last administered the gas—his leaps and springs were quite surprising: sometimes he would spin round on his heel like a top, vault into the air, and then strip and assume the attitude of the pugilist; it required several persons to prevent him from doing mischief. The effects seldom last above ten minutes, and leave the individual as before. The gentleman to whom we exhibited the gas in this case, though rather of a fevered temperament, experienced during the entire following day an extreme chill in the tips of his fingers. A rapid succession of ideas, an extreme acuteness in the sense of hearing, high muscular excitement, and vivid mental vision, are its usual concomitants, though not invariably, and on some it has no effect whatever. We suppose Dr. Beddoes had something of this kind in his head when he wrote to one of his friends (and who mentioned the circumstance to us) in the following laconic strain: "I have just discovered the springs of life." In a month afterwards Dr. Beddoes was no more. The vapour of sulphuric ether much diluted with atmospheric air produces

an effect analogous to nitrous oxyde when inhaled, but sulphuric ether has been exhibited in Pulmonary Consumption without any good effect whatever.

Chlorine is the characteristic name given to a gas discovered by Scheele in 1774. It is the oxymuriatic acid gas of former chemists, the chlorine of the new nomenclature, and the "bleaching gas" of the manufacturer. It is best prepared by the more direct method of adding muriatic acid to peroxyde of manganese in a glass retort, when the gas may be expelled by a gentle heat, and collected over water. Chlorine possesses a *green* colour, as its name imports, and its specific gravity is four times greater than that of oxygene: a small portion of it allowed to escape into an apartment may be breathed: it is only, however, when atmospheric air is slightly impregnated with this gas, that it is at all tolerable; for when unmixed its effects are very violent, and even frightful. Peletier fell a victim to its inspiration, and we have seen a person who had accidentally inhaled a portion of it from a large stoppered phial, completely convulsed, and his face become quite black. On the other hand, we have observed the most extraordinary effects follow its cautious administration in catarrhal and Pulmonic inflammation; and, in one case, a gentleman who had suffered for many years under asthma was completely and permanently cured, by having been in the immediate vicinity of a quantity of this gas, which escaped on overturning undesignedly a cylinder containing it, left standing over the shelf of the pneumatic cistern. Mr. A—, of the Staffordshire Potteries, has stated in corroboration of the above opinion, that *asthma* was

hardly ever seen—never fatal among the men employed in an atmosphere of Chlorine. He had also known several who had recovered from asthma in these circumstances; and Dr. Baron, of Gloucester, has communicated to Dr. Hastings "a very obstinate" case of asthma, wherein Chlorine appeared "to have done much good." When the dry hand is immersed into this gas, a glow of warmth is immediately felt, and proves a specific action on the skin. The fact was pointed out by Dr. Hare, of Philadelphia, and we clearly proved, subsequently, that the phenomenon was entirely unconnected with any condensation of hygrometric vapour in the atmosphere, or in contact with the cuticular surface. Its healing properties, when applied to sores, are sufficiently notorious; the abraded and excoriated skin soon granulates under its influence, and we have been often indebted to it for relief in inflammatory sore throat and Pulmonary attacks: indeed, we have been in the practice of using it from time to time since 1818.

The effects of chlorine in arresting contagion and destroying infection are very remarkable. Guiton de Morveau's Preservative Phial evolves chlorine: this apparatus has been much improved by M. Boulay, and is generally employed in the hospitals of France. De Labarraque's disinfecting liquids are compounds of chlorides of lime and of soda; and it has been recently proved that even clothes infected with plague, when rinsed in either the chloride of lime or chloride of soda, become innocuous. The process of putrefaction is arrested, and decay stopped in its career, by its application.

Septic poisons are decomposed and rendered harmless by chlorides, and thus is a safety screen interposed between

us and death. Hudson's chemical bleaching liquid, and the *Eau de Javelle* of France, are solutions of chloride of lime. Fincham's solutions of the chlorides of lime and soda, as recommended by De Labarraque, are the best we know; they are faithful preparations, and what is more, they are of a certain determinate specific gravity, which enables us more distinctly to judge of their powers and action. No family who consults its safety should be without the solution of chloride of lime. Should typhus and scarlet fever assail it, or any other contagious disease (for some diseases *are* contagious, a position we could unequivocally demonstrate were it the place), this would be a safety shield. In fœtid and noxious smells, fumigations of vinegar and camphor are worse than useless, since there is more than analogy to prove that their direct tendency is, by presenting subtile vehicles, to promote a more immediate, complete, and determinate absorption: they may envelope the poison, but do not in any way alter its malignity, while chlorine and chlorides are known to decompose it. Fumigating pastiles are as bad as can be: they may be compounds of "frankincense and myrrh, and all the powders of the merchant;" but their deleterious properties are not the less sure. That the direct action of chlorine is to destroy subtile septic poisons, we may infer from what takes place when chlorine is brought in contact with those mortal septic gases, arsenicated and sulphuretted hydrogene; in the former, flashes of purplish light ensue on every bubble of chlorine that enters the cylinder, and its interior shines with the metallic lustre of deposited reguline arsenic; while in the last case sulphur is evolved. We have charged the atmosphere of a room so com-

pletely with sulphuretted hydrogene as to be almost fatal to any one who would have breathed it for a few minutes, and yet entered that atmosphere with the most perfect safety, having in our hand a vessel constantly evolving chlorine; dense yellowish clouds of sulphur floated through the atmosphere, and, shortly after, the presence of sulphuretted hydrogene could no longer be detected by the organs of smell.

We remember to have seen M. Thenard in the "College de France" repeat an interesting experiment of this kind: a greenfinch, on being introduced into an atmosphere deteriorated with this gas, suffered apparent death, but on being withdrawn, and its head held for a moment over a small phial containing chlorine, it immediately revived. We have repeated the experiment successfully with other birds; and, in truth, from some experiments made, we are inclined to believe it has other properties than those ascribed to it, and may occasionally be used with success in rousing the powers of the system to renewed activity, as in cases of opium, &c. The remarkable action it exercises on the skin in the increment of temperature which supervenes, and its power to reanimate from the lethal pause which follows the action of prussic acid on the system, all tend to prove this. We cannot for a moment doubt that chlorine in an aërial form must exercise the most decided and specific action on diseased lungs. In 1823 a medical gentleman of Mansfield administered chlorine at our particular request in a case of tubercular Consumption, where the patient was fast sinking under the disease, and had not many hours to live. The first application was unfelt by the patient; but in the second case the effect was dis-

tinctly perceived, and he said he was relieved. Of course the case was utterly hopeless, and it was merely an experiment to ascertain the effect of chlorine at the *last hour* on tubercular Phthisis; the fungoid envelope seemed to have been thus eventually penetrated. In Mr. Broughton's interesting experiments,* where the animal died in an atmosphere of chlorine, it was found on dissection that the peculiar odour of the gas was distinctly perceptible throughout the structure of the lungs; and it had thus evidently passed the epiglottis and entered the system by the air passages; the tissue of the lungs moreover was dyed of a yellowish colour, in consequence of the absorption of the gas. The sanative properties of dilute nitromuriatic acid, as described by Dr. Scott, must be ascribed in all probability to the chlorine which evolves, on mixing the two acids. Ulcers are soon granulated and healed by either diluted nitromuriatic acid or solution of chlorine, or when submitted to the direct action of the free gas.

We made experiments by introducing animals into imprisoned atmospheric air, and, by passing up nitrous gas into it, thereby converting the medium into one highly impregnated with Nitrous Acid Gas, eventually obtained complete and decided evidence of its having found its way to the bronchia. This vapour, equally effective in many cases with chlorine, possesses an advantage over it, in that it can, as we have in numerous cases of diseased lungs proved, be breathed mixed with atmospheric air, without the slightest irritation being produced on the pulmonary apparatus. We have also found that it

* See Professor Brande's Journal, March, 1830, p. 150.

decidedly and completely decomposes sulphuretted hydrogene; and, in one case, the hand, which had been abraded and festered, having been exposed to the influence of the vapour expanding in a vessel, the sore soon granulated, sloughed, and healed completely. In pulmonary affections, accompanied by severe catarrh, and excited by the slightest cause, the vapour gave rise to no cough whatever: a proof of its vast superiority over chlorine, since the latter might accidentally excite coughing, and be followed by a rupture of some of the blood vessels of the lungs: it was to guard against this evil that we prosecuted our researches, though we presume that the priority of suggesting and employing chlorine in diseases of the lungs has been clearly and unequivocally demonstrated to belong *de jure* to us; and that we have not had numerous examples of success to announce as their triumph over Pulmonary Consumption, is to be ascribed to our not being in medical practice, and of course not being able personally to employ them. We are sorry to add that the progress of triumph has been impeded by the tardy adoption of these remedies, by medical men, because they have not emanated *ex cathedra.* We are grieved to say that there is an unhappy jealousy of this kind, too prevalent we fear, though relieved by some honourable and bright examples. But surely this might well be spared in our case, where there is not the semblance of any thing that might lead to suspect empiricism, the whole process of which we from our heart detest and abjure. In a pecuniary view, we have made numerous sacrifices, and in return have received neither fee nor reward. Add to this, we have developed such rational grounds for the adoption of the

curative plans we propose, and of which we personally live to attest the benefit and the value, that we cannot conceive what reasoning could be arrayed against them; at least this is our humble conviction, and that no permanent stand can be made against their ultimate universal adoption. We have not the slightest doubt that if such be not a complete specific in Pulmonary Consumption, it approximates sufficiently near.

CHAPTER V.

HYDROGENE—CARBONIC ACID GAS—UNIFORMITY OF ANIMAL TEMPERATURE IN HOT AND COLD ATMOSPHERES—RELATIONS OF THE ANIMAL FUNCTIONS TO TEMPERATURE—RADIATION, ITS EFFECTS.

Hydrogene is the lightest of elastic fluids, and constitutes two parts by volume of the constituents of water, from which it may also be obtained; for if the vapour of water be passed over iron turnings, its oxygene will combine with the metal, and the hydrogene will be developed in a nascent state. This gas however is usually obtained by the action of sulphuric acid and water on iron filings, or granulated zinc; and may be collected as it evolves from the gas bottle, and received in proper vessels over the shelf of the water bath. The gas is about fourteen times lighter than atmospheric air, and sixteen times lighter than oxygene; hence its obvious application to aërostation; and we have it from one of the pupils of Dr. Black, that its application to balloons originated with that eminent teacher, who inflated with it a small globe, formed of the allantois of a calf, and exhibited its ascent to his class. It is highly inflammable, and is not absorbable by water. When equal volumes of this gas and chlorine are combined by the electric spark, or inflamed, muriatic acid is formed; and with nitrous gas, in equal parts, it produces a mixture which

burns, when ignited, with a green flame. This gas may be breathed for a few minutes, and possesses the very remarkable property of changing the voice, which becomes in consequence soft, shrill, and even squeaking: this curious property was ascertained some years ago at Geneva, and has been since verified in this country. When the gas is allowed to escape slowly and gradually from a minute orifice, and kindled, singular intonations are produced, when narrow tubes of glass, &c. are brought over the jet of flame: a phenomenon, however, not peculiar to hydrogene. The most remarkable feature of this gas is the property discovered by Dobreiner, of Jena, and for which the phenomena described by Mr. Edmund Davy, and the aphlogistic effect of platinum wire, discovered by Sir H. Davy, and applied by Mr. Ellis of Bath, to the "flameless lamp," might have prepared us. It is found that if a stream of this gas be directed on spongy or finely divided platinum, the mass is ignited sufficiently to kindle the jet of hydrogene. This has been elegantly employed as an instantaneous light, and the machine has been so much simplified as to make it acceptable to every one, from the ease with which it may be managed, and the certainty of its action. Small balls of this spongy platinum, made up with adhesive earth, have also been employed eudiometrically in effecting by an explosive power the immediate combination of hydrogene and oxygene. In our previous remarks, we have adverted to Dr. Edward's experiments on respiration in this gas.

In the "Giornale di fisica" we find that Signor Giacomo Cardone inhaled 30 cubic inches of Hydrogene at two inspirations. This experiment was followed by

great difficulty of respiration, constriction at the lower extremity of the œsophagus, copious perspiration, general tremour, an extraordinary sense of heat, slight nausea, and violent headache; vision was impaired, and the ears rung: these several effects soon ceased, with the exception of heat, which was very much increased.

We have heard of an atmosphere impregnated with hydrogene having been successfully used in pulmonary disease, supposed to be consumption of the lungs, and that it proved curative; we confess that it is not so obvious to our mind how hydrogene could thus prove sanative. In scrofulous disease, it is true, sulphuretted hydrogene, suspended in mineral waters, proves curative; but it is still worthy of inquiry whether or not it be the constituent *sulphur* which is the sole efficient agent, the elastic hydrogene being an aërial vehicle, serving to subtilize it and render it more susceptible of absorption by introducing it where it could not otherwise be carried. The method adopted however in the case referred to, was to add sulphuric acid and water to zinc, contained in a convenient vessel, and this being disengaged in a close room, the individual repeatedly entered the atmosphere thus created, and remained a few minutes. It is worthy of remark that the probabilities are that the gas obtained in this way contains a small portion of *zinc*, and we know how active salts of this metal are. The gas obtained by this method certainly differs from hydrogene procured by the substitution of turnings of iron for zinc, the specific gravity is also very different, and there are other features of distinction.

Carbonic Acid Gas is interesting, as having been the first aërial body discovered. Passing over some

vague notions about it entertained by Van Helmont and others, we must ascribe the merit of insulating this aërial body as a distinct and peculiar gas to Dr. Black, who successfully effected it in 1756. Carbonic acid gas has also been called fixed air, and aërial acid, because it was found to unite chemically and intimately with quick lime, and other caustic bodies, and presented acid properties. On absorbing this gas the character of causticity is extinguished, and *carbonates* are formed. The name it now possesses is sufficiently descriptive of its character; carbon, or the base of charcoal, is one of its constituents, and in combination with oxygene, an acid is formed, while it is a gaseous or aërial body. It is very heavy, 100 cubic inches weighing 46,5 grains. If atmospheric air be numerically represented by 1000, this gas will be 1523,6. Carbonic acid gas may be procured by the action of an acid on chalk, limestone, marble, or any carbonate. Muriatic acid is that commonly employed, from the extreme solubility of the muriate of lime, which is formed on the evolution of the gas. Nitric or nitrous acid would be more expensive, and sulphuric acid forms an insoluble salt; we do not mean to say that all acids would disengage the gas, for some are too weak to do it, such as hydrocyanic acid for example, but with the exception of a very few the gas may be evolved by the affusion of acids on carbonates. It is absorbable by water, but not very rapidly so, and may therefore be collected in the water cistern. From its great specific gravity it may be obtained by being suffered to fall immediately into the receiver, without the intervention, altogether, of water: it may also be laved or decanted from one vessel to another, poured through funnels, drawn off by stop cocks, or pumped out.

To the presence of this gas, champagne, perry, cider, ale, &c. owe their peculiar characters: hence they sparkle when poured out, or a few drops of acid are added. It is found in some mineral springs. In one near Exeter we found it abundant; but the Seltzer water of Germany affords the most direct evidence of this kind. An artificial imitation of it we have in what is called "soda water," wherein the water is, by a condensing engine, made to take up several atmospheres of carbonic acid gas. This gas is fatal to combustion and to animal life, and is the "choke damp" of the miner. It is also found in caverns, wells, and mines, as well as cellars and vaults long excluded from air. It is the product of common combustion, nocturnal vegetation, fermentation, and respiration. Hence crowded rooms are extremely noxious; and when this is conjoined with the combustion of gas, oil, wax, &c., the amount of deterioration is tremendous, and utterly destructive to the healthy functions of the lungs: the theatre and the ball-room afford examples; and in these, altitude will determine a specific ratio; for the boxes in the former are more insalubrious than the pit, and the galleries than either, because the azote remaining after combustion will ascend, as well as the product, carbonic acid gas, when expanded by heat. M. Lavoisier found that in a theatre, from the commencement to the end of the play, the oxygene of the atmosphere is diminished in the ratio of 27 to 21, or nearly one-fourth, and, of necessity, so much the more unfit for respiration. This is increased manifold by the incense of perfumes, which, though some may be able to withstand, others may succumb under: and we are much mistaken if the lungs will in any case play

freely and healthily in a cearment of aromatic air, though fable tells us that birds of paradise breathe it among the spice islands.

The fair Constantinopolitan, who shared the crown with Domenico Siliro, one of the latter Doges of Venice, in 1069, had her apartment so perfumed with medicated waters, that many, on entering this atmosphere of incense, fainted away from its overpowering effects. She was withal so luxurious as not to touch food with her fingers; but used a gold fork, an article of imperial refinement in these days. Even now, as Mr. Rose observes, the Venetian ladies are extremely sensitive to perfumes, and they have proved fatal to some.

The fatal effects of crowded and confined respiration were terribly proved in the catastrophe of the black hole of Calcutta, where one hundred and forty-six human beings were crowded in a cube of 18 feet. It is not many years since an almost similar destruction of human life took place at Malta, though the victims were young. Numerous are the accidents which occur from burning charcoal in unventilated sheds, rooms, &c., and from the combustion of coke. The effects of this noxious atmosphere are too plainly depicted in the pale and haggard aspects of those who are exposed to its baleful influence, such as we perceive in the individuals who frequent the coffee-rooms on the continent, as in Italy, in the winter, where brasiers of live charcoal are introduced, there being no chimneys. Nothing contributes more to the health of Britain than the cheerful *open fire-place*, and the ventilating chimney; and, should a false refinement or mistaken idea of improvement in this wonderful age deprive us of these last props of

salubrity, the mischief that will follow must be incalculable. The constitution has to sustain quite enough in the atmosphere of towns illuminated with gas, which escapes at the several junctions of the pipes in every street—not to speak of its introduction into private families, the imprudence of which we imagine must be obvious to every one on a moment's reflection. Dr. Paris, in his "Pharmacologia," has the following judicious remarks on this subject: "I take my protest against the introduction of gas into the interior of houses. Carburetted hydrogene is a deadly poison, and, even in a state of great dilution, it is capable of exerting a very baneful effect on the nervous system. I have been consulted on several occasions for pains in the head, nausea, and distressing langour, which had evidently been produced by the persons inhaling the unburnt gas in the boxes of our theatres." Sir H. Davy endeavoured to inhale four quarts of carburetted hydrogene: "After the first inspiration," says he, "I lost all power of perceiving external things, and had no distinct feeling, except a terrible sensation in the chest. During the three inspirations this feeling disappeared, I seemed sinking into annihilation, and had just power enough to drop the mouth piece from my unclosed lips. A short interval must have elapsed, during which I respired common air, before the objects about me were distinguishable. On recollecting myself, I faintly articulated, 'I do not think I shall die.' After making a few steps which carried me into the garden, my head became giddy, my knees trembled, and I had just sufficient voluntary power to throw myself on the grass. Here the painful feeling of the chest increased with such

violence as to threaten suffocation. If I had taken four or five inspirations, instead of three, they would have destroyed life immediately." The deteriorating effects of the gas used in street illumination, superadded to its introduction into manufactories, churches, chapels, newsrooms, &c. are quite enough, without the admission of so baneful an agent into our private houses. Let the tide of improvement stretch far and wide, but let not its waves, when fraught with danger, invade our dwellings; better it should be stayed in some of its channels, than the purchase be made at the expense of a life of suffering or premature decay.

Carbonic acid gas, it may be added, emerges from the floor of the *Grotto del Cane*, and on the verge of the Lago d'Agnano, and we found it occupying the superior part of an ice-house belonging to T. N. Parker, Esq. of Sweeney, which was clearly ascertained to be a product of the decomposition of the straw which lined the walls of the structure, the entrance into which was from above. This gas cannot be breathed without suffering, and almost immediate death. We endeavoured to breathe it in the case of the *Grotto del Cane* for a short period, and certainly did not experience that constriction of the glottis which is consequent on an endeavour to do so with the gas obtained in the usual way. The evolution of the gas in this rocky recess, however, is accompanied by an increase of temperature, and aqueous vapour, to the last of which we ascribed the peculiarity in question. A very remarkable phenomenon is described by Mr. Broughton, in reference to the animals which perished by breathing carbonic acid gas, as it appears that the temperature of

their bodies in the interior was as much elevated as if they had been exposed to the *influence of fire.* The suspension of respiration has been ascribed by Dr. Heberden to a spasmodic action produced by it on the glottis, and by which convulsive action the glottis closes. This gas cannot, it must be obvious, be administered through the medium of respiration; and since it is cast off from the lungs as part of their egesta, their healthy action would be interfered with, by gorging them with what it is their constant effort to get rid of. If, however, the naked hand and arm are enclosed in an atmosphere of it, contained in an oiled silk bag, an absorption takes place by the cuticular surface, and the tissue becomes flaccid. It is in this way that carbonic acid gas has been employed in excessive excitements of the system, or in cases of extreme irritability, and the direct tendency of the gas is to allay these excesses, by acting as a sedative. Thus administered it might sometimes be serviceable in the sensitive state of the system labouring under Consumption, and in which the irritation and excitement of the respiratory organs are so great.

The functions of respiration, and topics of artificial atmospheres, have occupied considerable space; but they are of the deepest importance to the question of pulmonary diseases, and are the sources from which almost all the "ills that flesh is heir to" spring, or with which they are directly or indirectly associated.

The uniformity of the animal temperature in every clime, vicissitude, season, or elevation, is not the least remarkable of the products of the animal functions. The inhabitants of the torrid zone have a similar temperature to those of the temperate and frigid zones, and

the natives of Sumatra, Madagascar, and Borneo, in this respect, are precisely the same with those of Nova Zembla, Spitzbergen, or Greenland. The maintenance of this specific temperature within a variable atmosphere, and however chilled or heated the medium be, is a phenomenon very wonderful and worthy of admiration. The agency of the nervous apparatus is fully recognized in the support of the animal temperature and its original evolution; and we presume Mr. Brodie's experiments here are sufficiently conclusive; while, in all probability, the same means are employed in preserving the balance of temperature; and the auxiliary functions, such as respiration, and the transpiration of the cutis, supply their parts in the routine. Electricity is the agent which restores to the atmosphere its lost equilibrium of temperature, and tends to preserve the balance unimpaired; and the striking analogy which exists between electric power and nervous agency, goes far to confirm Mr. Brodie's conclusion. In the curious experiments by Sir Joseph Banks and Sir Charles Blagden, the system supported unimpaired a temperature exceeding that of boiling water, and meat was cooked. In the "Histoire de l'Académie royale des Sciences," we are supplied with some very curious examples of this description in the experiments made in 1760 and 1761, by Du Hamel and Tillet. The heat of the oven into which the girl entered was 260°. This female salamander assured M. Tillet that she felt no inconvenience whatever when the thermometer stood at 288° F. being 76° above the temperature of boiling water. She remained ten minutes in the oven heated to this point. Another girl remained above five minutes in an oven heated to 325°; the last being repeated by M. Marantin, a careful observer.

In experiments made some time ago at Paris, a Spaniard named Martinez entered an oven heated to 110° Reaumur, and ate a fowl that had been roasted by his side. His pulse beat 176°, though it was only 72° before he entered. Two French academicians saw, at Larochefoucault, a man who habitually supported for 10 minutes the temperature of an oven at 112° R., in which fruits and meats were cooked. On one occasion Sir Charles Blagden remained, together with a female dog, for eight minutes in an oven heated to 100° R. The feats of Chaubert, yclept the "Fire-king," are of modern notoriety. The highest temperature to which we have ever been exposed in experiment was that of a japanner's oven, which was many degrees above that of boiling water. We felt much less inconvenience, indeed, than when we traversed the steep subterranean gallery of the baths of Nero, near Naples, where the vapour was only 98° F. We remember also to have experienced no pain on holding the hand, *when dry*, in the hot vapour which issued into the *Stufa san Germano*, and which the thermometer determined to be 210° F., while the finger dipped in water and introduced, was scalded. The human system is not indeed exposed to atmospheres like these, though very high temperatures are often met with within the tropics. Thus, according to Adanson, at Senegal, the air in the shade is mostly heated to 94°. On the road from Senegal to Poder it is frequently 111° by day, and 86 at night. In Nigritia the sand is heated to 140° F.; at Pondicherry, lat. 12° long. 67. the temperature, as stated by Mr. Gentil, during part of May, June, July, and August, was 113° or 115° F.; and in April 83° to 93° F. The coast of Quito may be stated at 90° to 96°.

On the other hand, the intense cold that can be sustained by the human system is almost equally incredible. Thus in Yakutsk and Yeniseisk, in Siberia, mercury has been congealed by the natural cold, which consequently must have been at least—39° F., or 71 deg. below the freezing point. The mean temperature of Irkutz, from October 1780 to April 1781, both included, was 6° 8′.*

During Captain Franklin's recent voyage, the weather in the vicinity of the Coppermine River was so intensely cold that the fish froze as they were taken out of the nets, soon became a solid mass of ice, and were split open with the hatchet. In Captain Parry's case the phenomena of cold were equally remarkable. Brandy was frozen, and other extraordinary effects of the same kind were presented. Mr. Howse, an intelligent gentleman, long resident among the North American tribes in high latitudes, informed us that he has experienced a degree of cold so severe that the watery vapour of respiration has frozen immediately on its expulsion; yet, even under such circumstances, he has been under the necessity of walking without any covering on his head, the circulation being maintained by brisk exercise. In Bath, during the severity of last winter, the thermometer on one occasion exhibited a fall of temperature (as ascertained by Six's thermometer) equal to —18° F., being 50° under freezing. In the winter previous to our visit to the hospice of the great St. Barnard, in 1825, the thermometer fell to 18° minus zero, similar to that of Bath. The average depth of snow in winter at the hospice, is twenty feet. The lowest temperature, we believe, ever

* Kirwan's Estimate of Temperature. London, 1787, p. 66.

yet obtained by artificial means, has not exceeded 72° minus zero, or 104° below freezing, the result of the evaporation of sulphuret of carbon conjoined with the action of the air pump.

It must be agreed on all hands that heat is an important agent both in the prevention and cure of pulmonary disease; still this temperature must have its proper limit, and there are injurious extremes. We consider that the question rests not so much on an elevated temperature as a well-adjusted or regulated one, so that sudden transitions, at all times hostile to the constitution, may be avoided and checked; neither is it so much the cold, merely as such, that affects us, but it is when the air is loaded with vapour that most danger is to be apprehended, while a humid warm atmosphere is, we conceive, equally to be avoided. When the air is loaded with aqueous vapour, whether in summer or winter, respiration is more or less laborious or oppressive; and, on the other hand, a dry atmosphere is most compatible with the free functions of breathing; we do not speak of a perfectly desiccated atmosphere, for that would be going as much to the other extreme. Equability of temperature, with air of a specific density and certain hygrometric or atmometric character, are valuable, but chiefly if not entirely as auxiliaries to remedial measures, and as giving medicines a better chance. Artificially heated rooms have therefore been proposed as a substitute for the virtues of a warmer and less variable clime than ours; but a freely circulating atmosphere, animated by the calorific and electric rays of the sunbeam, is very different from a stagnant one artificially heated, and perhaps loaded with vapour. Mr. Brodie concludes that animal heat is in

some way or other dependent on the integrity of the nervous system, and that cold lessens the irritability;* that it also impairs the contractile powers of the muscles, by causing a contraction of the capillaries; thus lessening the superficial circulation, and stopping the cutaneous secretion.

A number of experiments have been made in France on *ducks* and *chickens*, by M. Flourens, in reference to hybernation, or torpidity:—he observes that cold appears to operate to induce torpidity by the gradual decrease of respiration, the operation of cold being less influential as respiration is more active:—the following are his inferences:—1. That cold exercises a constant and decided action on the lungs of animals. 2. That the effect of this action is more rapid and serious in proportion to the youth of the animals. 3. When cold does not produce an acute pulmonary inflammation speedily mortal, it produces a chronic inflammation. 4. That heat constantly prevents the inroad of pulmonary Consumption; and when it has actually commenced, heat suspends its progress, and sometimes even leads to a perfect cure. 5. That to whatever height the malady has arrived, it is never contagious. We fear, however, that heat *alone* will never effect a cure. Doubtless *cæteris paribus*, heat will alter the density of the atmosphere, and may render it in Pulmonary Consumption more easily respired; while cold inhaled might, under such circumstances, from the consequent febrile excitation, prove too rude a check. There is still another important function exercised by the animal frame, wherein the influence

* Or what has been more properly called *excitability;* by exercising them in their proper functions, and thus disposing them to rest.

of temperature is especially concerned, we mean that of the *skin*. A check to perspiration, whether sensible or insensible, is to be particularly avoided; and if this, suddenly effected in the integrity of health, gives rise to inflammatory fevers and the like, it must in Pulmonary disease, where there is already superinduced a morbid action of the skin, prove still more injurious. The profuse perspiration which is declared in the second stage of the disease, seems to indicate a struggle and endeavour of nature to relieve herself in that way. To assist the functions of the skin, therefore, and prevent any check to their proper action, is obviously an important desideratum; and perhaps the benefit of a warm climate may tell in this direction as much as in any other. Dr. Keil and Dr. Hales found that in twenty-four hours a man lost by perspiration thirty-one ounces, six of which were evolved by expiration. Any thing that would impede or altogether prevent the free exercise of these functions, so important and essential to health, would, it is evident, be extremely injurious: a cold atmosphere would do this, and a warm medium, on the other hand, facilitate their more free action. Transplantation to a warm clime may suddenly reanimate the system, as a plant sinking in decay rallies and revives again when taken from the chilling vicissitudes of the open air and transferred to the hot-bed or the stove.

Clouds are the great check to radiation; for they intercept the heat that would otherwise escape from the earth to the heavens: a clear sky and still atmosphere are conditions necessary to the full efficacy of radiation, and the loss of temperature will be found proportional to their prevalence. We feel persuaded that more

catarrhal affections are attributable to this cause than even to cold produced by evaporation. It is important to remember that any veil drawn over the spot will altogether prevent the loss of temperature which might be sustained from this cause. The formation of dew is entirely and satisfactorily explained on these principles: the heat radiates in a calm night to a clear nocturnal sky, and the surface from which it emanates being chilled, the vapour in contact is condensed, and deposits its moisture; cold is, therefore, a previous occurrence, but on the instant the vapour condenses into dew, heat is evolved. The maximum degree of cold, therefore, depends on two conditions,—a perfectly cloudless sky and completely tranquil atmosphere. The intervention of clouds interrupts the cooling process, and the breeze dissipates the already formed moisture, or prevents its formation altogether. Hoar frost may be considered as congealed dew; and neither the one nor the other will form during cloudy weather, or when winds sweep the plain. It is thus that Dr. Wells, in his "Essay on Dew,"* has proved to demonstration that the combined circumstances to which we have alluded, favour or interrupt the production of dew; and its formation is, therefore, similar to that which gives rise to the deposit of a film of aqueous vapour on the external surface of a glass vessel in a heated room, when cold water brought immediately from the spring is poured into it. Hence the formation of ice in the upper provinces of Bengal, in porous earthenware pans. These pans, supplied with water, are laid on dry straw or brushwood, to cut off, by

* London, 8vo. 1814.

their non-conducting character, all communication with terrestrial temperature, and allow radiation its full scope. The shelter of some jungle is selected for this purpose, and a square space excavated for the pans and brushwood. We are informed by a gentleman who was one of thirty, supplied from this source alone with from twenty to thirty pounds of ice, each alternate day, as his proper share, that they were never disappointed in obtaining a sufficient quantity of ice, provided the sky was clear and a settled calm prevailed, even when the temperature of the atmosphere was 47°. Hence, though the atmosphere of an Italian clime be high in its general temperature, the ground may be excessively chilled by the brilliancy of its sky and the repose of the atmosphere. Thus do the plains of Piedmont and Lombardy suffer severely in winter; and the orange tree, which would flourish on some slope in the amphitheatre of Genoa, would perish in the vicinity of Turin. Thus, too, malaria stalks triumphant where the system is immersed in a shroud of vapour, which, condensing, settles on the plain, because it is thus exposed to the full amount of the chilling effects of radiation; and this will be found in marshes and swamps in its maximum grade of malignity. The intermittent of our fens is only a milder type of the malaria of the Pontine marshes or the Campagna di Roma; and as the drainage of our fens has chased away endemic agues, so the cultivation of the Campagna deserta of the Imperial city would have its due influence on the incumbent atmosphere, and those who might dwell there. It is known, for instance, that if the surface of a soil be frequently stirred by the hand of art, it is less susceptible of being

affected by drought; and the spade and the plough, with an ever-green livery of vegetation, in a judicious routine of crop, conjoined with clumps of trees planted here and there, to attract and condense moisture, would soon reclaim that territory from its sterility, even in despite of the *Lago di Tartaro*, which occupies a niche of the district. Rome itself would feel the benefit of the change in the article of health. The Roman territories might soon become as exuberant, bountiful, and salubrious as the kingdom of Tuscany. In the last case industry has put her shoulder to the wheel, while idleness and *ennui* brood over the Papal soil.

To reclaim the melancholy waste presented in the Campagna di Roma, chequered only by the ruins of Claudian's aqueduct, and which contains neither tree nor hedge, some have proposed to plant olive trees, and others mulberries; others sagely recommended *paving* the Agro Romano, and one Cardinal advocated the pasturage of sheep and black cattle.

From the preceding observations it will be at once apparent what danger we incur in our transit from the roofed domicile into the atmosphere, for even if the temperature of the air within and without were precisely the same, the system would be chilled to freezing by radiation, in a clear sky; and the difference between a clear aspect of sky and one obscured by clouds is sufficiently remarkable: without the trouble of looking upwards, our feelings under such circumstances will determine the question, whether clouds be floating over our head or the sky be clear and cloudless.

CHAPTER VI.

CHLORATE OF POTASSA: ITS MEDICAL EFFECTS ON THE SYSTEM—CONTRAST WITH DIGITALIS—OBTAINMENT, AND PRECAUTIONS IN THE APPLICATION, OF CHLORINE AND NITROUS ACID VAPOUR—EFFICIENCY, CONJOINED WITH CHLORATE OF POTASSA, IN PULMONARY CONSUMPTION—PRACTICAL ILLUSTRATIONS—CONCLUSION.

PERHAPS one of the greatest desiderata in Therapeutics is a medical agent, which, while it subdues the inflammatory tone of the pulse by lowering the rapidity of the circulation, will not, at the same time, reduce the strength of the patient. *Digitalis*, at all times very equivocal in its action, while it lessens the pulsation, is attended by a fearful and painful prostration of strength, so that the individual almost wishes that death would put an instant period to his sufferings. A happy substitute for this agent, if we mistake not, will be found in CHLORATE, or OXYMURIATE, OF POTASSA. When in Paris, in 1818, we filled up our leisure hours with translating Chaussier's work, entitled "Contre poisons,"* the second edition of which had then been just published. What more immediately engaged our particular attention was the recommendation, by the author, of the employment of Chlorate of Potassa, in cases of contusion by violent blows and falls, and in croup. It is important to the present question to quote the precise words of the

* H. Chaussier. 2d Edition, à Paris, 1818.

author: "Vingt années d'expérience m'ont démontré d' une manière incontestible, que le *Chlorate de Potasse*, ou *muriate* de Potasse suroxigéné, est le meilleur vulnéraire que l'on puisse administrer dans ce cas."* He then directs four *gros*† of this salt to be dissolved in about twenty-four spoonfuls of cold water, and three spoonfuls of the solution to be taken for four successive days, morning and night. A dose of two spoonfuls is prescribed to a youth of ten years old, and a tea spoonful to an infant three times a day, morning, noon, and night. By this treatment the symptoms promptly disappear. M. Chaussier does not pretend to determine the basis of its *modus operandi*, but insists that, under certain circumstances, its benefit may be most decided and efficacious. In order to allay the fears, however, which some may entertain as to the danger of employing it in the quantities prescribed, he mentions, as the result of experiments made on himself, his having taken, during twenty-four hours, to the amount of a gros and a half of chlorate of Potassa, and adds that no inconvenience will be felt from it, provided none be taken on the two following days: its influence extends to forty or fifty hours.

In the case of Croup,‡ so frequently fatal to children, M. Chaussier prescribes an emetic, and considers tartar emetic preferable to any other; and if the symptoms are not diminished on the following day, that is, if the cough be as frequent and violent as ever, and if there still re-

* Page 153.

† A *Gros* is equal to a drachm, or the eighth part of an ounce; rather 59 grains.

‡ Whether the *croup* of France differs in any degree from the disease of this country, we are not able to determine.

main the same wheezing in the breast, or the same closeness in respiration, he prescribes a second emetic—sometimes even a third, if the symptoms continue twenty-four hours afterwards with undiminished severity. When the breast is more free and respiration easier, and there appears to be a sensible melioration, he follows it up by giving two or three times a day a solution of chlorate of Potassa in water, or in some suitable diet drink: according to the age of the patient, from eighteen to fifty grains of the chlorate, and continues these doses for three or four days following. Though the patient may seem entirely cured at the end of this period, Chaussier continues the use of the chlorate of Potassa, to prevent a relapse, for ten days more, but in smaller doses, and on alternate days. He considers that the chlorate of Potassa is given with most advantage during meals. Though we are hostile to tartarized antimony being given as an emetic to children, and would substitute ipecacuanha in its stead, we should certainly have great confidence in this remedy for croup; and in the case of croup in our own family, should certainly prefer it to all others with which we are acquainted. M. Chaussier observes—"J'ai donné mes soins à plusieurs enfans attaqués du croup, et aucun n'a été victime de cette maladie si souvent meurtrière."* This assurance we have a right to believe and accept.

Having thus stated the source whence our information respecting the medical use of chlorate of Potassa has been derived; and which, strange to say, though occasionally employed by a few medical practitioners, accord-

* Page 177.

ing to Chaussier, has not yet found its introduction into our Pharmacopœias; we may add, that shortly after our return from France we had occasion, in our own person, to put the efficacy of this medicine to the proof, in consequence of having received a serious fall, by which we voided a considerable quantity of blood. We commenced with doses of eight grains three times a day; the immediate relief obtained was remarkable, and in a few days the cure was complete. Since that period it has been used, on our recommendation, with great success, by a clergyman of the Church of England, who had twice ruptured a blood vessel; and even in violent uterine hemorrhage a medical gentleman of Derby has employed it in his practice, on our suggestion, with the most beneficial effects.*

Though its more direct agency seems to be connected with the circulation, it also exercises a very marked one in a torpid state of the liver, and a physician wrote us, he had employed it in a case of this kind, at our special request, and that it had proved triumphant where all other remedies had constantly failed. Nor is this a solitary case of the kind, since we possess many others; but this volume was never intended to be a register or catalogue raisonnée of cases. In our own person, and in that of many others, it has been found a *specific* in *cynanche tonsillaris*, from which we have been in the habit of suffering at regular periodic returns, in spring and autumn, and the only anterior relief was the lancet applied to the abscess. By the exhibition of 6 or 8 grains of the chlorate morning and evening, it has been always imme-

* Gibbon, in his "Medical Cases and Remarks," recommends the free use of *nitre* in hemorrhage.

diately subdued; by persisting in this for several times, on its first attack, it has been banished from the system, and we have remained free these several years from its visitations. In chronic catarrh of many years standing, it has effected a complete and permanent cure. Though personally susceptible, we scarcely know, in propriâ personâ, what a permanent cough is, since we find it soon dismissed by judicious doses of chlorate of potassa.* We are not particularly attentive to quantity, but generally commence with six or eight grains, and have given it to one of our children, a few months old, in doses of two or three grains, with the most salutary effects. At our suggestion, it has been made up into lozenges, and thus become a convenient mode of exhibition in catarrhal complaints.

The agency of chlorate of potassa on the system is very mild and gentle. It speedily reduces febrile excitement, and in a case which was supposed to be *ulcerated trachea*, two doses of eight grains each reduced the pulse from 120 to 97; while the system, so far from being lowered, is contrariwise *strengthened*, which we have in person repeatedly experienced. Its effects are somewhat diuretic, at least in morbid glandular affections, and from that interesting circumstance we doubt not but its judicious administration, in combination with other medicines, might give relief in hydrothorax, and, in an early stage of the disease, perhaps effect a cure. We are supported analogically in this belief, from having witnessed

* A medical gentleman thus writes: "We have been cured of a severe catarrh, within these last few days, by an 8-grain dose of the chlorate, taken in a basin of gruel, at bed-time, and feel very grateful to Mr. M. for the knowledge of so agreeable and active a remedy."

its beneficial results in anasarca of the legs attendant on a case of phthisis.

No doubt the agency of chlorate of potassa will have its peculiarities of constitution to contend with, and many curious examples of these eccentric phenomena, called idiosyncrasies, have already been given. Dr. P., of London, has stated, that in a case in which he gave this salt, it did not subdue the inflammatory and febrile action, but the reverse! In the instance of a medical gentleman of Hull, who, being sceptical on its merits, took it by way of experiment, it raised, we are told, pustules on the tongue; though it certainly subdued the pulse. Another has endeavoured to convince his patients that the virtues of *chlorate of potassa* were precisely the same as those of nitre, and no more, which is, in other words, to say that two substances *chemically different* are, nevertheless, *chemically the same* in their action! A medical practitioner, of Wolverhampton, thus writes: "In our experiments, as to the action of chlorate of potassa on the system, the ingestion of the salt, in six-grain doses, has been followed by a marked sense of coldness, supervening quickly, and lasting for one, two, or three hours. In one case, it caused universal pains, likened by the patient to those of rheumatism, which did not follow the administration of powders resembling in appearance, and believed by the patient to be, those containing the salt." Such facts prove that it is a medicine of great power. Some individuals that we know have endeavoured to underrate its medical efficacy, and to prove it *inert*. The chlorate of potassa may, for ought we know, have been *tried in fractions* of a grain by way of experiment in this country, but such have not met the public eye, and we feel

much satisfaction in laying before the medical practitioner a chemical agent of much importance and high promise, and fraught with a full title to his acceptance. It is the province of the Chemist to do so. These are not the days of alchemy that he should conceal the produce of his labours; and the Physician may well look to the Chemist as the legitimate source whence will arise his brightest prospects and greatest triumphs. The scientific Chemist has therefore a right to expect at his hands both gratitude and respect. Take away from the Physician what the Chemist has given him, and what has he left behind! The chlorate of Potassa has not yet taken its place in the *materia medica;* and Pharmacopœias and Pharmacologias do not recognise it as a medical agent. Rennie, in his supplement, condescends to tell us that it is *an ingredient* in matches for procuring instantaneous light! and the instances of *fears* and *distrust* in its employment, we could adduce, would be somewhat *amusing.* We may wind up this section by the following extract from the correspondence of a medical friend: "I have found the *potas. oxymur.* highly beneficial in cynanche tonsillaris. In scarlatina it is most valuable. Dr. K., of our infirmary, says, it relieves chronic coughs: it invariably lowers the pulse: it has calmed an excited and alarmed hypochondriac, and procured sleep."

We shall indeed find a most decided contrast, by comparing the effects of chlorate of potassa on the system with those of digitalis—always uncertain, sometimes even dangerous.

"Foxglove," old Gerarde says, "boiled in water or wine, and drunken, it doth cut and consume the thick toughness of gross and slimie flegme and naughtie hu-

mours. The same, or boiled with honied water or sugar, doth scoure and clense the brest." The Italians seem to have considered its healing powers so great that its catholicon virtues became proverbial:—"Aralda tutte le piaghe salda:" foxglove cures all wounds. Its administration requires the greatest caution, and its effects, after all, are most equivocal. It is presumed that its specific power is subject to great variety; and we doubt not but it may suffer decomposition by age, temperature, and light. Though the leaves are chiefly relied on, the flowers are used by some: the medical virtue cannot be the same in both. At one period foxglove was prescribed by almost every one in Pulmonary Consumption. Dr. Paris says, "Digitalis is an excellent drug in some species of dropsies; but my own experience does not authorize me to say that it is certainly useful, either in an incipient or in a confirmed phthisis, when all its effects are fairly taken into account."

It is now regarded as useless, except in the incipient stage of tubercles, to subdue their irritation by a supposed *sedative* power. An injudicious use of it has been followed by fatality. It seems to exert some influence over the heart, and thus subdue the power and velocity of the pulse. When the system is lowered by venesection, diuretic effects are produced by digitalis. The tincture and infusion equally, perhaps, affect the heart; while the infusion only has influence on the kidnies: we may presume, hot water imbibes a quality which spirit without heat will not take up. The extreme danger consequent on its exhibition, is evident in the fact that many sudden deaths have occurred from neglecting the

precaution of preserving the patient in a recumbent position while under its influence.*

" Look on this picture and on that!"

In the administration of both chlorine and nitrous acid gas considerable caution will be required. All metallic furniture must be discarded; even gilded surfaces will be acted on by chlorine, and coloured hangings, &c. may be bleached, particularly if damp: a moist atmosphere will thus especially promote this action. The room, therefore, whither the patient retires, had better be entirely emptied of its furniture, and devoted to this exclusive purpose.

If a portion of peroxyde (or black oxyde) of manganese be put into a small basin or tea-cup, and muriatic acid (or spirit of salt) poured over it, and the ingredients mixed together be suffered to float in a vessel of tepid water, chlorine gas will be disengaged and impregnate the atmosphere: the proportionals of the peroxyde and muriatic acid must be according to the size of the apartment and the strength of the patient to bear it: thus it may be from a quarter to an ounce of the former, and two or more fluid ounces of the latter. The patient must enter this atmosphere several times a day, and each time remain a short period, so long as not to be painful or oppressive, and the quantity of impregnation must be insufficient to excite cough or irritate the lungs; two or three minutes at a time, and repeated five or six times a day, will be found quite sufficient; the physical strength

* A medical friend admits this to be a most just account of the effects of digitalis.

and progress of the disease—in fact, circumstances and feelings—must determine these points.

Connected with this part of the question, we beg to quote an extract from a letter, addressed to us in 1824, by Mr. Brown, an eminent bleacher, of Mansfield, Nottinghamshire; it was written at our particular request, and arose from a conversation with the late Benjamin Hutchinson, Esq., of Southwell, whose interesting Treatise on Tic Douloureux has so deservedly rendered his name dear to medical science. At this conversation, which involved our remedial measures in Pulmonary Consumption, in reference to chlorine gas, Mr. Brown was present: he stated his own case as corroborating our views, and we, in consequence, requested the details:—

"Having every reason to suppose myself an asthmatic subject, and knowing what small dependence was to be placed on the then known specifics, and having frequently seen the effects of the gas on persons employed in the making of it, I determined on trying its effects on my own lungs. I should here state to you that my breathing was so very short that I could not walk up a small hill without the greatest difficulty, and felt as though a fungous substance was growing upon the lungs; indeed in every respect the same as a person I then knew, who was labouring under confirmed asthma.

"The method of taking the gas was this: I went twice a week into an open apartment, in which there was an apparatus for the manufacture of oxymuriate of lime: whilst the materials were mixing, and before the retort was luted, a quantity of the gas would escape into the room. Of this gas (of course in combination with atmo-

spheric air) I breathed from five to ten minutes, according to the intensity of the gas, or until it produced an uneasy sensation in the chest: at first it did not operate to produce coughing immediately; but after walking about a short time I began to cough rather violently, which continued, with little intermission, for perhaps an hour, more or less, during which time I expectorated very freely: this violent exertion naturally produced lassitude, which would continue the remainder of the day; but the day following, and particularly the second day after taking the gas, its salutary effects were visible; I could breathe more freely and walk much quicker than before, and the more violent the coughing had been the better were its effects.

"Although I do not intend troubling you with the course of reasoning which induced me to try the gas, yet I will mention one circumstance which greatly encouraged me in the use of strong doses. I have witnessed very many instances, where bleachers who were obliged to work among the gas, could not possibly prevent inhaling so much of it as to produce violent spasms; I have seen them rolling upon the ground for an hour together, and could scarcely draw breath, yet I invariably found them recover eventually, and in two or three hours the oppression on the lungs had entirely subsided. I have noticed also many of the men who have been most exposed to the action of this gas, live to a very great age, and I never knew an instance of one dying from having been seriously injured in health from the effects of the gas. I continued to breathe the gas once or twice a-week for about two months, when I found I had no further occasion for it as a medicine, as I could breathe

as freely as I could wish; this may be about ten years ago, since which time I have occasionally, when I found my breathing a little affected by cold or otherwise, had recourse to the gas, which never fails to produce the desired effect.

" About nine years ago, a neighbour of mine who had been gradually declining in health some months, and whose situation had become very critical, being almost without hopes from the faculty, from hearing me relate the effects of the gas on myself, felt anxious to try it. Not knowing sufficient of his complaint, or rather believing he had a complication of diseases, I reluctantly consented to his receiving it, yet as he had great difficulty in breathing and a troublesome cough, and thinking by relieving the lungs, it might in some degree tend to restore the rest of the system, I gave him what I considered a sufficient dose for the first time: he however could not feel that he had taken the least portion, though I had breathed it in the same atmosphere (standing beside him) until it produced cough: I therefore persuaded him to decline taking any more for the present and to walk about, which he did; he however would persist in taking a further quantity, till I would not suffer him to breathe any more of it. It did not operate upon him during the day, (for it was taken always in the morning) nor till he had been in bed about four hours, ' when he began to be warm;' he was then seized with coughing so very violently that he never expected to recover. The quantity of phlegm discharged was immense. For two or three days he felt very weak, and declared he would take no more gas; he however gradually improved from that time, got tolerably well, and is now living."

We have been accustomed to administer nitrous acid gas in Pulmonary Consumption in the following simple manner: a small quantity, to the amount of one or two ounces of red fuming nitrous acid is poured into a wide tumbler glass, while the patient sits in the current of the vapour, in the act of escape and diffusion into the atmosphere, at about eighteen inches, more or less, apart from the glass, according to circumstances; the vapour will soon be felt, and at no distant interval an evident amendment will attest its efficacy and proclaim its value. The patient may remain two or three minutes at a time, and repeat the experiment four or five times a-day, as may be convenient and agreeable. At the close, a bladder may be put over the glass,* which will retain the vapour and preserve it for further use, since the same supply may be used several times.

It should be stated that slight head-ache will be produced by the continued use of the vapour of nitrous acid, and of course this will be the signal for a short intermission in its exhibition. "Some of the patients to whom I have given," says a medical correspondent, "the nitrous acid, discontinue it in consequence of the nausea it produces." But may not this very nausea, on the principles assumed by that distinguished physician, Dr. Baron, prove eventually salutary?

I should certainly recommend, in some, if not all cases of tubercular Consumption, sponging the chest with a solution of chloride of soda, about milk-warm. Keeping in view the interesting experiment of the crude mercury taken internally, and subsequently determined

* A piece of glass or slate will serve better, as the slip of bladder will be chemically acted on by the vapour.

to the surface by a blister, it becomes a question worthy of attention whether the influence of chloride of soda administered internally might not also, by a similar topical application, be determined to a particular spot.

We have exhibited the *Chlorate of Potassa* in doses of four to eight, and even twelve, grains, two or three times a-day. It is needless to add that both these exhibitions must gradually decline in frequency as the patient recovers, but we do not deem it at all necessary to particularize, because it is altogether foreign to our wish to interfere in any way with the medical practitioner, though it be an obvious and imperative duty to summon our best powers and exertions to the task of relieving suffering humanity from the painful inflictions of this insatiable disease.

As this little volume is by no means intended to be a display of cases, and a parade of medical lore, for which we do not find that we are competent, so a selected few from an intimate friend will suffice; and it is presumed that there will be found no unnecessary parade in the announcement. We are well aware that the cases which could be adduced in our own person would be liable to much objection, and be received with jealousy; we therefore entirely avoid them. We feel, moreover, an insuperable delicacy in requesting details of cases from medical gentlemen with whom we have only had a casual or short acquaintance, notwithstanding their successful application of the remedial plan communicated to them. Besides, in provincial practice, generally, the register of cases is too lax and indefinite. It is, however, now to be hoped, after it has been thus promulgated, that communications respecting its efficiency will be made to the public through the medium of the medical journals.

Should the statements which follow not prove convincing, we fear that a volume of cases would be equally vain, and all argument prove unavailing. They seem substantial facts, and should the evidence adduced be refused by some, we cannot help it, not doubting that, however the appeal may *now* be rejected, the facts will ultimately triumph over all hostility and opposition; nor can we forget that the greatest gifts with which suffering humanity has ever been gifted and blessed by, have been received at first either with coldness or indifference, distrust or suspicion: the legend of ages corroborates the remark, and the hostility arrayed against vaccination, and the safety lamp, are circumstances too recent to be already forgotten. We proceed, therefore, without further prefatory remarks, to cite a few extracts from the communications of our friend Richard Hughes, Esq. of Stafford, one of the surgeons to the county infirmary, a gentleman in extensive and eminent medical practice:—

"I can no longer delay to relate what poor particulars my memory will supply me with, though I fear my statements will be much too vague to make a successful stand against the incredulity with which a *remedy* for Consumption will have to contend. Having no time to digest or arrange my matter (having but received your letter at eleven o'clock on Saturday night), I will just relate what cases I can at this moment recollect, in the order of time. First, that of the young man, Pickin. That he got well you know. He remained well till the following November, when he took cold at a wake. You know his obstinacy. He resisted the efforts of his friends to induce him to inhale the gas again, though he confessed it had made him well before; consulted an itinerant

physician when he had been some time ill, took from him, according to his prescriptions, bark, steel, Iceland moss, and hyoscyamus, gradually got worse with the usual symptoms of Consumption, and at Christmas, or the beginning of the following year, died. These particulars I gathered from his mother, with the design of communicating them to you. His sister, about a year ago, had cough, langour, debility, shortness of breath, a dull sound in the upper part of one lung on percussion; in short, all the usual signs of incipient Phthisis, without disorder of the digestive organs. The means used were the acid gas, neutral salts, and afterwards slight tonics. In about six weeks she recovered, but tells me she has since felt in the same way again, in a slight degree, and found a few days use of the gas, without any other medicine, restore her. She has been, during the last three or four months, quite well. I often see her—not professionally of course.

"Do you remember a note I wrote you about a girl, ætat 17, who had been troubled with a very loud spasmodic cough for many years? I informed you that the acid cured it in a fortnight, after ordinary means, applied by more than one medical man, had failed. This cough returned about a year ago, or less, and was again checked by the same means. I consider this cough to have been caused by ulcer of the larynx, or trachea.*

"The young lady I took you to see at the house of the draper, and who began to use the gas and oxymuriate of potassa under your directions, got quite well in about six weeks. I have seen her frequently since; and only

* I should have separated this case, not being one of *Phthisis*, but it illustrates the healing effects of the gas.

three days ago heard that she continues well. The change in her appearance is most striking. You beheld her a pale, slender, delicate girl: her countenance apparently too pure and transparent for flesh and blood: panting on the least exertion, and working the alæ nasi at every breath: attempting to sing, and completely in character, Pope's "Vital Spark." She is now plump and strong: her face bronzed by exposure to the air: her voice full and loud; in a word, she is "in vulgar health." She warmly expressed her gratitude, when I last saw her, with wonder at the change. She said she had not known health for two years, though nothing could have made her conceive how ill she had been but present feeling of health. To assist your memory, it will be well to state, that when you saw her she had frequent short cough, febrile action, swelled ankles, and night perspirations.*

"It will be objected to cases like the above (when accompanied as they generally are with emenorrhœa) that the symptoms indicated neither more nor less than chlorosis. I would reply, that chlorosis is with difficulty cured by appropriate remedies. Can a disease, then, which so readily yields without these remedies, *be* chlorosis? I presume not. I have lately had a case so like the above, that it is needless to detail it—in which the young woman could only speak three or four words at a breath, and in which there was more the appearance, and even the history, of chlorosis than in the former, where percussion detected engorgement of the upper part of both lungs. The gas, and some febrifuge medicine re-

* She continues quite well.

moved the pectoral ailment in a few weeks, and steel and aloes *subsequently* given, rectified the menses.*

"Mrs. H., a young married woman, not lately pregnant, and who had miscarried two or three years ago, consulted me about two months since. She had the usual symptoms of Phthisis, with evident indication of tubercular deposit in the upper part of the left lung, ascertained both by percussion and the stethoscope. The gas, aided by counter-irritants, sedatives, and aperients, has nearly, if not quite, restored her to health." In a subsequent communication, Mr. H. concludes the case as follows :—

"I have this evening, June 8, seen the married female whose case I related in my last: she has now no pain in her chest, nor any other symptom of Phthisis. Her chest sounds well, yet there is a very slight dulness on her left side above the mammæ,—the former seat of pain.

"Mr. John Hall, of Apeton, near this place, a member of a very consumptive family, having lost a sister and a brother, the latter of whom I saw during his illness, permits me to communicate to you the following particulars, the result of our mutual reminiscence. He was attacked in the Christmas of 1828, after exposure to wet and cold, with violent pain in his chest, cough, &c.; a surgeon bled, blistered, and physicked him, and he partially recovered. In May following he came under my care: his breathing was so bad that he could not walk two hundred yards; he was greatly emaciated, though his appetite

* Mr. Hughes, in a letter dated 2d March last, observes, "She has applied to me twice with a tendency to tubercular Phthisis (without amenorrhœa) and been relieved by the gas. She is now a domestic servant."

continued good, and had pain in the right side of the chest. The indication of disease afforded by percussion was most striking. I detected the seat of pain thereby alone. There were no violent symptoms, yet he was evidently sinking. I immediately began with the Potassæ Oxym. and the gas. He went home much better in a fortnight, and I saw him not again at that time. In six weeks he was so well that he discontinued the use of remedies. Soon afterwards he frequently walked six miles and back in a day, without any unusual effort or inconvenience.

"Toward the end of November he had an attack of Pleurisy, as before, severe pain on the left side, slight cough, but little expectoration, and inability to inspire deeply, and the early treatment was the same. When he came to me, a fortnight afterwards, the symptoms were mitigated, yet he had still some pain on coughing or filling his chest, was much emaciated, and very weak. He had no night sweats; he could not count audibly more than six or seven at a breath; chest sounded well on the left side; the right, as formerly, gave a dull obtuse sound. Staid in Stafford a fortnight. Treatment as before. Could walk better, but began to lose breath after walking three-quarters of a mile on his way home.*

"On the 10th of last February, when this account was taken, he had recovered flesh and colour. His own words follow: "Lusty as ever I was; no cough, no pain; can walk two or three miles with pleasure; get stronger and better every day:" the chest sounds well to seventh rib on the left side—to third rib on the right. The dulness

* Let Mr. Hall's case be called what it may, the effects of the remedial plan were strikingly beneficial.

on the right has become less. His pulse was near a hundred when he first applied for relief, on both occasions; and was reduced in frequency to the natural number (seventy or eighty in a minute) before he left. His age is about forty.*

"I this morning made inquiry of a lady in this town respecting the present state of health of her late servant, whom I had the satisfaction to treat successfully after your plan two years ago. Information that the young woman continues in perfect health had reached the lady as late as a month from this time. When under my care her age was about twenty-one years: she was pale, slender, particularly flat-chested, and stooped. Her disorder having advanced gradually and insidiously, had almost quite disabled her before she felt the necessity of seeking medical aid. Perhaps too she was deluded by that false and fatal hope, which is almost diagnostic of Tubercular Consumption. At last her mistress insisted that she should have professional advice, having previously provided her a separate bed, lest her breath should induce the same disease in her young fellow servant. (I state this last particular as affording indirect evidence.) The woman, when I first saw her, had a rapid pulse, cough, hurried respiration, and spoke only in a whisper. She had pain in the chest, and a very obtuse sound on striking the sternum between the upper part of the mammæ. She was compelled to move about very slowly and could only count four or five at a breath. At the end of six weeks

* Dr. Hastings considers this case as one of *chronic pleurisy*. He *may* be right, but he is not *infallible;* and Dr. Gregory admits that even this belongs to a class of diseases not the less important and dangerous that they are *latent and obscure*.

from this time all these alarming symptoms had subsided: she could move as quickly as she wished without distress or difficulty, and readily inspire air enough to enable her to pronounce twelve or fifteen syllables in a full voice—not a whisper as at first. In this case the nitrous acid and oxymuriate of Potassa were (with occasional aperients) the only medicines used.

"I will relate another case, not the less interesting in that it terminated fatally; since the death was fairly attributable, like Pickin's, before stated, to the disuse of that which might have prevented it, after decided benefit gained by the employment of it:—

"Mrs. Gripton, a very young married woman, whom I had attended in her first labour, at a village about three miles off, and whom, on that occasion, I observed, to be of a highly Consumptive diathesis, came to me in the spring of 1828, labouring under extreme shortness of breath, cough, and expectoration. About two months before she had taken cold while attending on her infant, then six months old: the child died, and the mother afterwards menstruated. I forbade her to walk to Stafford again—indeed, she was not able,—and in a week or two, when antimonials and a moderate bleeding had subdued inflammation, directed her to use the nitrous fumes. She was a thoughtless woman, having no abiding consciousness of her danger, and it was with difficulty I could induce her to continue the use of the gas after the more violent symptoms had been subdued. For months I was constantly mortified to find that, when nearly well, neglect and imprudence lost her all the advantage she had gained. Still, however, improvement was evident, and in the autumn I discontinued my gratuitous attend-

ance; leaving my patient so much better that my only ground of fear was her negligent habits. Calling on her in the spring of the following year, 1829, I was grieved to find her more ill than ever. She was again pregnant, and had been persuaded that, pregnancy being the natural cure of Consumption, she had better leave it to nature. There was much fever, great emaciation, constant cough, and expectoration, diarrhœa, hectic flush,—in short, every symptom of Phthisis, in its concluding stage. In July she gave birth to a six-months' child, and three days after expired."

It is better to withhold remarks from these cases. Amid the discrepancies of medical gentlemen in diseases of the chest, each may be allowed to sustain his own opinion. I consider the diagnosis of Phthisis by *percussion* and *auscultation* to amount as near demonstration as can be, and with medical scepticism, and disputations among medical gentlemen, I have no right to interfere: this is their concern, not mine. They may do well, however, to peruse, diligently, Dr. Gregory's Paper on the diagnosis of the lungs and pleura, in the Edinburgh Medical and Surgical Journal, No. CIV.

In Dr. Hastings's remarks on the curability of pulmonary Consumption, the sanguine expectations entertained by eminent *medical* men cannot, according to him, be rationally explained, while a ready solution is formed for the empiric. Our opinion happens to be, that a successful remedy is more likely to be discovered by the man of science who is not fettered with the formulæ of medicine and the theories of the schoolmen. The man of science is not trammelled by the routine and reverie of hypothetical speculations. Dr. Hastings assumes only two

extremes; we, a *tiers etât*, and this too without the slightest disrespect to the "learned of the medical profession."

It is readily granted that "Pulmonary Consumption" is a vague and indefinite term. We used it because the most eminent physicians have done so, not excepting that learned knight, Sir Charles Scudamore, and Dr. Hastings himself. This point physicians must settle among themselves, and until they do so they have no right to call in question its employment *ex cathedra*. The entire of my little volume proves that it relates to tubercular Consumption, wherein, agreeable to our author, the prospect is "much more dreary." It cannot be out of place here to remark that the general term *Consumption* has been classed under the following subdivisions:—I. *Catarrhal;* II. *Apostematous;* III. *Tubercular;* and to these Dr. Wilson Philip has added a *fourth*, the *Dyspeptic*, which, however, Dr. Paris and others have called in question, but in the settlement of which we have no right to interfere. The *first* class is the *Pituitous*, or Pituitary Consumption of German writers, and seems to be seated in the membrane lining the windpipe or its termination. The *second* class generally happens in individuals of a plethoric habit, in which spitting of blood is an early symptom. It singles out as the victims of its attack those who are young and have a blooming and florid complexion: it is deeply seated in the lungs, and it is called the "Galloping Consumption" from the rapidity of its progress. The *third* class is rarely accompanied by *Hymoptæ* as an incipient symptom. It is insidious, and attacks those of a pallid scrofulous habit. In this case tubercles are seated in the cellular substance of the lungs. A moment's reflection will tell any one that no one remedy can apply

to all of these. Though somewhat acquainted with the details of chemistry, we are not an *alchemist*, and a *catholicon*, or *alkahest*, never once entered into our speculations. Dr. H. is anxious to impress on the attention of his readers the fact, which it required no oracle to tell us, that no *one remedy* can be successful in every case. The symptoms "vary in different individuals so materially, that they call for a corresponding variation in the means of cure:" *probatum est.* We cannot doubt that there are reason and common sense in medical dialectics, and feel persuaded that Dr. H. is a warm advocate for both. We have already stated that there are modifications of the disease, and there must also be a modification of treatment. There are different stages of the *same* disease, and there must consequently be variations in the application of the same remedy. There are also constitutional circumstances to be attended to, and combinations of phenomena may modify the original type, and must be considered. With ipecacuanha, James's powder, steel, blisters, and counter-irritants or tartar emetic—with blue pills, chalk, laudanum, and the other et ceteras, we have nothing to do, nor have we meddled; but it seems very evident that when the seeds of inflammatory action are rankling in the system, and the germs of the disease appear under different aspects, they may be modified by constitution or circumstances. It is to check the vitality of these seeds of disease, or altogether to destroy it, that we have suggested our remedy. If we have considered the action of medicines aright, it is of a twofold character: first, to reanimate the *vis vitæ*, and by a tonic power to enable the system to weather the storm, and combat the disease which assails the frame-work of humanity; and, secondly,

to heal the wounds that it has inflicted, and repair the wreck of its assault. Can the former be accomplished by bleeding and reducing the strength of the system to its zero? Is not this something like "binding the strong man" that the robber may despoil him of his goods? Without at all questioning the propriety of the measure, let us take one of Dr. Hastings's cases: ten ounces of blood were taken, then follows,—"The blood which was drawn appeared very much cupped and buffed, but the symptoms were scarcely alleviated by the treatment." As no diminution of inflammatory action supervened, at the end of four days six ounces more were taken; but "the blood drawn on the second occasion was nearly as much inflamed as the first." Notwithstanding all this, eight ounces more were taken; and I defy the most firm advocate for the bleeding system, in examining this case, to say that this copious and repeated evacuation had the slightest share in reducing the inflammatory action. In two other cases there was *no bleeding*, though the pulse was higher (namely, 100, while in the first it was only 96), and in one of these even *animal food* was allowed: and, though susceptibility still remains, the cases were favourable. How are we to reconcile these discrepancies? We must first weigh, in the balance of a rigorous induction, whether any or what relief is obtained by the *medicines* administered contemporaneously or subsequently to the bleeding, to determine whether this blood-letting be serviceable or really injurious. Dr. Hastings is not to be told that depression of spirits or prostration of strength takes from medicines half their power and virtue, and that the same medicine will operate very differently at different times, and all this depending on a modification of constitutional circumstances.

We may as well quote a paragraph to our purpose from what Dr. Brown has said, being too well aware what prejudice we, in *propria persona*, have to encounter on the part of the medical profession, because not in *medical practice;* but if the matter is considered aright, such petty and unhandsome jealousy is not due, *at least to us*, and we may claim *courtesy*, if not respect and kindness. The Physician can do but little without the Chemist, and the Chemist may enter the *campo sancto* of the Physician. Were we inclined to be critical or severe, it would be no difficult matter to prove how constantly the Surgeon and Physician and Apothecary are trespassing on the provinces of each other. And is the Chemist to be interdicted from adding the science of medicine to his other studies, or is a diploma to confer the sanction or impart the aptitude?—"By removing," says Dr. B., "the blood, it does not follow that the inflammatory action can be relieved: if the impulsive cause remains unsubdued: the blood is the mere passive medium. If a morbid material still rankles in the blood, it exists in what remains, and the *vis a tergo* continues. Bleeding may afford a temporary local relief, but no more; and a fatal or dangerous reaction may ensue on its abstraction." "We do not bleed a patient labouring under inflammation, to weaken him, but to cure the disease: the weakness is a contingent result, and frequently an unfortunate one; the constitutional debility must furnish a check on the extent of our measures: to continue to bleed because the blood still retains a sizy appearance, would be an unsafe procedure. From many facts I am convinced it would be so; we cannot always cure inflammation by bleeding." * This process of reasoning, we

* Medical Essays, J. Brown, M. D. London. 8vo. Longman, 1828.

confess, appears satisfactory to us: and, notwithstanding the premonitory symptoms, on the principles of former doctrines, may sometimes call in the aid of the lancet, that destructive weapon ought to be brandished with much care and caution, especially since it is admitted by both parties that the question is, at any rate, *adhoc sub judice.* We hold it to be an axiom, that the system must be supported in this fearful struggle; that its strength should not be laid waste, and its powers levelled with the dust. Much more is to be ascribed to the *vis medicatrix naturæ* than is generally allowed by the medical practitioner; and, from a calm perusal of the conflicting treatment adopted by Dr. Hastings, in the several cases said to be cured or relieved, the most acute will find it difficult to tell how much of the remedial treatment applies to the renovation of the vital powers, and what has been achieved by a reaction of the system, or, acted a secondary and subordinate part in quelling or subduing the vitality of the germs of inflammation, and healing the wounds inflicted on the system by their action. This being the case, an elaborate attempt to prove what no one disputes, is mere wordiness; nor should we have thus presumed to sport a lance, especially with so talented and gifted a physician as Dr. Hastings, except for the purposes of self-defence, and that his reasoning seems a laboured attempt to prove that we are anxious to impress on the attention of the medical world a *catholicon* in Consumption; and that our remedy, *unaccompanied by auxiliary treatment,* will banish this fell destroyer from the earth. Now we have never said any thing of the kind, and are quite sure such an idea never swept through the day-dreams of our waking hours. Dr. H. instances a case

remarkably relieved by a very simple remedy: one of the symptoms was *colliquative diarrhœa ;* and, to restrain this, a mixture of *chalk and laudanum* was ordered: FORTUNATELY, the case was considered "hopeless," and the consequence was, the man got well, and has continued so for the last three years; though the seeds of disease still rankle in his system. It is, however, not unlikely, that if the man had not been considered a "hopeless" case, he might have fallen a victim to medical treatment: the Doctor asks, "What shall we say of this case? Is chalk mixture a cure for Pulmonary Consumption in its last stage?" Now *we* see nothing wonderful or astounding in the fact. It is, however, in point as one confirmatory of our position of the *vis medicatrix naturæ ;* or, as Dr. H. expresses it, "the repairing powers of nature." The diarrhœa was wasting the system to absolute inanity: this wasting power was checked, and the vis vitæ recovering all its tone and vigour, performed the miracle; the carbonate might also counteract dyspeptic symptoms, as an *antacid.*

If our views are rightly apprehended, we present chlorate of potassa as a substitute for that most dangerous drug, *digitalis ;* a substitute too that is safe and efficient, that subdues inflammatory action, and lowers the pulse, WITHOUT REDUCING THE STRENGTH OF THE SYSTEM; and is not this a desideratum, and is it not of the first importance? It will strangle the hydra in its incipient stage. Does not cough aggravate the symptoms, and is it nothing to obtain an anodyne? Are tubercles formed in the cells of the lungs, and has disease invaded their tissue? Tubercular disease will granulate and heal under the influence of chlorine and nitrous gas; it does so under external circum-

stances, and what should hinder it when the ulcer is in a cavity of the lungs? We see no reason why these gases should not be equally efficient there. But how is the remedy to be brought in juxta position with the diseased surface?—Only through the medium of respiration. These seem positions which all may understand. With diarrhœa or its opposite, &c. &c. we have nothing to do: we are grappling with the *root* of the matter, not the consequences which result from its action. Mr. Abernethy makes the following facetious yet judicious remarks: "Can Consumption be cured? Bless me! that's a question which a man who had lived in a dissecting room would laugh at: how many people do you examine who have lungs tubercular which are otherwise sound? What is Consumption? It is (ulcerated) tubercle of the lungs? Then, if those tubercles were healed, and the lungs otherwise sound, the patient must get better." This seems sound, solid reasoning. Our appeal is to the Stethoscope in the determination of this question: it is the *pointal*, and its language will be faithful and uncompromising. We protest against any inference being taken from its remedial influence, when applied as a *forlorn hope*, or be serviceable when tubercles, to use Dr. Hastings's own emphatic description, "absolutely annihilate the structure of the lungs." If this author thinks us a visionary, he is deceived for once: we have laboured too long at the oar of inductive truth to warrant such a charge. In the case cited, p. 386, where tuberculous disease had made such considerable ravages, not merely in the lungs, but in the *abdominal and thoracic cavities*, Dr. Hastings may well ask, "whether the imagination can picture to itself the possibility of this destructive

process being arrested by the application of any agent with which we are acquainted to the mucous membrane of the lungs, or to cavities in the lungs through the medium of the bronchial tubes?" We have no hesitation to return a negative to the query; and it is evident that there may occur victims to the disease from this cause, without at all impugning the virtues or efficacy of our proposed remedy. At the same time, it is very difficult for any one to say, whither a vapour thus applied may penetrate. By what means or through what channel do some matters, taken into the stomach, get so promptly into the bladder—asparagus and turpentine for instance? In 1739 Bertier seems to have proved that metallic and stony matters formed a passage from the lungs into the pulmonary veins and left chambers of the heart; and this has, by eminent physicians, been considered as substantiated. Moreover, there are cases of consumption where there are no tubercles in the lungs, and it is evident that chlorine and nitrous acid gas would be superfluous and unnecessary, except as a check to inflammation.

We shall now give, without comment, the two cases wherein Dr. Hastings tried the efficacy of chlorine and chlorate of potassa in the Worcester Infirmary, leaving them to their own fate, having only to regret that Dr. Hastings has so confounded chlorine and nitrous acid gas that we scarcely know which he means; and the same confusion may be recognised in his remarks on Mr. Hughes's cases, which by the way we wish also to leave as they are, and the question to be settled between Dr. Hastings and Mr. Hughes. However, we cannot but express surprise at the opinion of Dr. H. in the division

of the benefit between the virtues of the vapour and the tonics which accompanied its exhibition. If tubercles did exist in the lungs, would the internal administration of *steel, bitters,* and *aloes* heal that ulcerated surface? Is this conceivable? By their tonic powers they might however invigorate the system, and thus co-operate in the sanative virtue of the nitrous acid vapour (not chlorine). We feel most grateful to Mr. H. for an offer of additional cases, to substantiate and corroborate our views; but, as a medical gentleman has observed, "there is sufficient evidence to induce any unprejudiced person to make a confident trial of these remedies;" and medical journals are open for future cases, with the discussion of the merits of the remedies we have propounded. As they are comparatively novel, it may be sometime before they can be judiciously managed and properly restricted; but all new remedies have to pass the same ordeal, the *Secale cornutum* for instance, as well as *Iodine*, and others.

[FROM THE MEDICAL AND SURGICAL REPORTER. NO. XI. 1831.]

"*CASE IX.—Bronchitis; enlarged Heart; incipient Phthisis.*

"Sept. 25th, 1830.—John Milman, æt. 34, was admitted as an in-patient of the Worcester hospital, labouring under the following symptoms.

"Complains of cough, with muco-purulent expectoration; dyspnœa; stitching pain in the left side frequently; occasional sudden increased action of the heart; soreness in epigastrium, when taking an inspiration; cephalalgia very violent, accompanying, in general, the increased action of the heart; tongue furred; bowels open and regular; pulse 64, soft; has lost flesh considerably; very weak; countenance sallow and slightly flushed; occasionally towards night it becomes more flushed; health in general, good; appetite variable; disagreeable taste in the mouth of a morning; ill four months. The attack commenced first with cough, followed by attacks of cephalalgia and fever.

"26th.—V.S. ad ℥viij. Sumt. pil. ant. co. i. o. n. ℞ vin. antim. ♏xv. dec. hord. ℥i. m. sumt. 4tis. horis.

"27th.—Felt much relief from the bleeding.

"28th.—℞ Potass. chlorat. gr. v. Aq. distill. ℥i. ft. haust. ter die sum. Inhalt. vapor. chlorin, semel quotidiè.

"Oct. 2nd.—Inhaled the chlorine vapour for three minutes. It produced a fit of coughing, with a tickling sensation down the trachea. Slight nausea. He coughed very considerably afterwards. There seems to be a considerable degree of irritation.

"3rd.—Had a violent fit of coughing, and expectorated much yesterday evening; but he has coughed less to-day, and passed a better night. His breathing is somewhat relieved.

"5th.—Feels himself much improved.

"6th—Cough much better; expectoration the same; action of the heart very much diminished. Feels a soreness inside the chest, brought on by the coughing at the time of inhaling the vapour. Pulse very quiet; bowels open; tongue clean.

"10th.—Has been very well since the last report. Complains now of cephalalgia, which came on after inhaling the vapour.

"11th.—Omitt. vapor chlorin. Cephalalgia very severe; tongue cleaner; bowels open. Complains of fulness in epigastrium; pulse 60, full; urine very clear.

"12th.—Is much the same; urine last night was very thick and white; it is clear this morning.

"14th.—Cephalalgia continues; cough worse; troublesome tickling sensation in the trachea.

"17th.—Complains of tightness at the lower part of the thorax, at the ensiform cartilage, with fulness in the epigastric region. Applic. emp. lyttæ pectori.

"19th.—Has more pain and tightness across the chest. Breath more embarrassed.

"21st.—Blister discharges freely; cough very violent; tongue furred. On examination with the stethoscope, *the respiratory murmur was clear and healthy;* action of the heart violent and diffused: no *pectoriloquism;* lies on the right side always, for if he turns on the left it brings on increased action of the heart, and sometimes pain."

"*Case* x.—*Chronic Pneumonia.*

"Oct. 2nd, 1830.—Edward Williams, æt. 21, complains of cough, slight expectoration, dyspnœa, tightness across the chest, tender-

ness in epigastrium, occasional palpitation of the heart. Appetite bad; tongue furred; bowels open, and regular; pulse 88, quiet; feet always cold. Attributes his illness to cold. Ill nine months.

"℞ Potass. chlorat. gr. vi. aq. distill. ℥i. M. sumt. ter die. Inhal. vapor. chlorin. semel quotidiè.

"4th.—The chlorine vapour produced no fit of coughing, nor any peculiar symptom.

"5th.—Says that he has not coughed so much; feels more looseness in his trachea.

"6th.—Cough much less; expectoration more copious; more looseness, and comfortableness in the chest. Tenderness in epigastrium relieved; bowels open; tongue furred; pulse 92, quiet.

"7th.—Coughed a great deal after inhaling the vapour yesterday, as it was much stronger. Had a pain in the head, and soreness in lower part of abdomen.

"10th.—Feels better; cough improved.

"11th.—Cough better; expectoration less; dyspnœa relieved; tongue furred; bowels open.

"14th.—Does not feel quite so well; complains of pain in chest. Applic. emp. lyttæ parti thoracis dol.

"18th.—Is better; cough relieved; feels low.

"21st.—No expectoration; no cough scarcely.

"On examination with the Stethoscope, *the respiratory murmur was healthy.* On percussion, the right side sounded the best. Says he can lie on his right side the best. Action of the heart very much increased and diffused."

While we are determined not to enter on the field of medical controversy; we feel it to be a duty to make some remarks on Dr. Hastings's observations on the application of *chlorine* in the cases cited above; expressing, however, our wonder and surprise at the following extraordinary preface of Dr. H.: "This practice appears to me little more than a revival of the plan of treatment recommended by Christophorus Benedictus, in his Theatrum Tabidarum," &c. Dr. Hastings has inadvertently committed himself here; for he is not to be told, that

effluvia and vapours are NOT *gases.* He thus confounds medicated vapours of frankincense, storax, amber, and benzoin, with *chlorine* and *nitrous gas!* As for the allusion to the employment of factitious airs by Dr. Beddoes, the remedial application of chlorine, or nitrous acid gas, was never contemplated by him, nor could they be; as their introduction into the lungs, by the means employed by him, would have proved fatal; and Dr. Hancock has the following remarks in reference to this question:—"I am aware of the trials made with the gases and pneumatic medicines, by Dr. Beddoes and other celebrated physicians, but feel persuaded that these agents have never been duly tried on rational principles."

In Dr. Hastings's observations it is admitted that of those cases "Williams derived permanent advantage, he having gone home tolerably well." And is not this worthy of great attention? We give Dr. Hastings full credit for being well acquainted with cases of *genuine Phthisis:* we lament to observe, however, that the admissions, which truth and honesty have commanded, are given with a bad grace, and, as appears to us, with some reservation.

The entire tendency of his highly-interesting remarks is to prove that, though the means recommended by us may cure Consumption, this disease has been cured by *other* means, and therefore they must share the fate of other remedies recommended by equally sanguine individuals. We presume to ask, have they been prescribed on equally rational grounds, and will chlorate of potassa, and chlorine and nitrous acid gas, not prove triumphant in cases that may resist digitalis and the entire host of medicines usually employed by the most celebrated phy-

sicians of the present day? We protest therefore against too rapid or sweeping conclusions. Dr. Hastings does not "believe that ('the vapour of') chlorine has any curative influence upon those ulcerations that take place in the excavations arising from the dissolution of tubercles in the cellular structure of the lungs." This expression is very guarded. In the case of Williams, the stethoscope pronounced, "the respiratory murmur is healthy;" and in the other cases the indications by the instrument were equally *healthy*. We take for granted that the stethoscope was employed in the *first instance* in both, and that its dicision was indicative of *tubercles*, for Dr. Hastings expressly terms it "incipient phthisis," and the ultimate verdict of a "healthy murmur" proved that the tubercles *were healed*. "It is worthy of remark," says Dr. H., "that, in each of the cases above related, in which chlorine was inhaled, some relief appeared to follow the administration of the remedy." This observation, however, is thus softened down: "there is nothing very striking in this circumstance, for patients of this kind almost always feel better after the trial of a new remedy!!"—*Valeat quantum, &c.* "Another point," continues he, "is deserving of much attention: in all the cases, the secretion from the bronchial membrane was modified by the inhalation of the chlorine ('vapour'). The patients all seemed to speak of a greater freedom of expectoration after the inhalation; from which it appears certain, as might have been expected, that the action of the chlorine on the mucous membrane of the respiratory organs is worthy of great regard." "It appears to have much power in controlling the action of the bronchial membrane, and in that point of view would seem to

deserve a full trial from the profession at large.* In all old bronchial cases, where there is little irritability of the lungs, it holds out a promise of being salutary." We feel grateful to Dr. Hastings for these concessions, and for the limited trial that he has given it.

Dr. Hastings has observed that, "unless used very cautiously, and with a due regard to the peculiar irritability of the mucous membrane of the air passages, it may frequently be productive of very serious inflammatory action;" and he then instances the case of Simmonds. We presume to remind Dr. H. that we had said as much, and even more than this amounts to, and for that very reason sought out for *nitrous acid gas* as a substitute in such cases as these. But surely, though this may be *overdone*, or *injudiciously* or *incautiously* administered, this does not warrant its virtues being called in question, or the slightest detraction from its merits, and all this shows the necessity of the entire question being under the care and superintendence of the medical practitioner, which Dr. H. thus endeavours to substantiate, and which we had *expressly recommended.* We may now only observe, in conclusion, that properly and cautiously administered, these may be so applied; that in *no case*, even the most irritable state of the lungs, will either nitrous gas or chlorine excite cough. *Distance* will regulate the former, and the following is a very elegant method of applying the latter: pour a little chloride of soda, or chloride of lime in salution, into a shallow saucer: if the gas which arises be not

*Perhaps the Editor of "The North of England Medical and Surgical Journal" may now be more cautious and guarded in his decisions on this question.

sufficiently strong, add a few drops more or less of sulphuric acid; this will disengage precisely what may be found agreeable, and no more, and the quantity may be thus regulated with a facility and precision which is truly remarkable, and, so far from exciting, it *will allay cough.* We are very *anxious* to impress on Dr. Hastings, and other eminent physicians, the necessity and importance of a comparative trial of chlorine and nitrous acid gas, in various pneumonic diseases. We can engage that the results will be fraught with much importance to medicine.

We have, after much anxiety, and pursuing the footsteps of inductive science, brought our inquiries to a close. Many a painful reflection has the question cost. The terrible fatality which it involved, however, so far from imparting despair, on the contrary, roused all our mental appliances; the entire succession of links in the process of this inquiry has been inductive from first to last. We have no where meddled with the question of general and auxiliary treatment, since these, subject always to much variation, can alone be judged of by the medical attendant from the symptoms as they rise in review before him.

Having studied the action of chlorine and nitrous acid gas on ulcerated wounds, and having proved their healing virtues, it seemed obvious that the only alternative that remained was their safe and judicious exhibition, through the medium of respiration, to the seat of disease; for no

medicine otherwise employed could be expected to act efficiently. While this was being accomplished, there seemed to be another question that required equal attention, and this was the necessity of reducing the inflammatory tendency, which might otherwise undo what had been thus accomplished. In studying the medical history of Digitalis, it seemed to us essentially wanting in that particular feature which was especially requisite. The reduction of the physical powers by a prostration of strength, seemed to us to be removing from the system the very means which would enable it successfully to combat the disease. From repeated experiments made on ourselves with chlorate of Potassa, we eventually discovered the very agent which was so much the object of our search,—one that would allay febrile excitement and subdue inflammatory action, and yet leave the strength of the constitution unimpaired.

In Consumption, accompanied by hemorrhage from the lungs, the *secale cornutum*, or spur of rye, *(ergot)* merits particular attention; and, from personal communication on the subject, we consider that we possess just and proper grounds for the recommendation. M. M. Spairani and Pignacea have exhibited the ergot with decided success in *hæmoptysis*. In the case of a female, *ætat* 42 years, a drachm of the *secale cornutum*, divided into eight doses, was ordered to be taken within 24 hours. After the fifth dose there was not a trace of blood in the expectoration, though another drachm was subsequently administered to prevent a relapse. Other successful cases are mentioned. Half a drachm of ergot was administered in 24 hours to a young girl of 12 years; this was continued for four days.

We have only further to add that we have recommended to a medical friend the importance of sponging the body of the phthisical invalid very frequently, say every alternate day, with solution of *chloride of soda*, such as that of Beaufoy and of Fincham, conveniently diluted, the good effects of which will be soon apparent.

We have been brief and abrupt on the difficult question of Tubercles in the Lungs. It has been, and even now is, the bone of contention in medical science, and the subject of a prize at the present moment. It was enough for us to know that they were there and required to be healed. Inflammation too has been the fruitful parent of fruitless controversy. We have taken it as most rationally explained in the researches of Dr. Phillip and Dr. Hastings, or at least that the phenomena of inflamed surfaces are best represented by these eminent individuals. Some, however, suppose it to arise from a thickened state of the fluids in the capillaries, or extreme vessels, while others impute inflammatory action to their constriction. Another opinion ascribes it to their overaction, while a fourth would have it the reverse. A fifth party, on the other hand, are of opinion that inflammation arises from an unusual flow of blood towards the part, and is thus the consequence of a *vis à tergo*. We do not presume to settle these contrarieties. While our own opinion on the important question of venesection has been partially shaded, we have introduced the conflicting testimonies of those whose extensive practice and enlightened judgment enabled them to form the best opinion; and it is not difficult to see to what side the balance will preponderate. We might have added many more authorities of the first stamp to our list, but such an extension of names

seemed unnecessary. Dr. Burne and Dr. Stoker seem to be decidedly averse to the employment of the lancet in subduing inflammatory action; while Dr. Smith employs it without scruple in its most incipient stage, which looks very much like rebellion against Dr. Marshall Hall's *caveat.* It is asked, what are we to do when inflammatory symptoms are strewn so thickly over the system? But the question is not as to the existence of inflammation, but the means of subduing it, which must be either rational or empirical. Perhaps the epithet of "Brunonian" may be attempted to be fastened on us. TRUTH, however, is, and has ever been, in all our inquiries, our "magnus Apollo."

Nullius addictus jurare in verba magistri.

FINIS.

NOTES.

Page 8.—The celebrated John Hunter, who died on the 16th October, 1793, in St. George's Hospital, was a case very analogous to that of Malebranche. Being engaged in his duties as a surgeon, he had a warm dispute on some professional topic with Dr. Pearson. Having remarked, "I must retire, for I feel an agitation which will be fatal to me if I increase it," he immediately withdrew; but Dr. Pearson, unwilling to yield the argument, followed him, which so enraged John Hunter, that he exclaimed, with vehemence, "You have followed me to be the death of me! you have murdered me!" and instantly fell down and expired.

Page 17.—Stethoscope. In reference to the various modifications of sound of which this instrument becomes the indicator, we must not be carried away by fancies, or be led to the rejection of a valuable auxiliary in the pathology of Tubercular Phthisis by the whims of some individuals: such a misfortune seems to assail this important instrument. Dr. David Badham has actually *set to music*, forming a kind of pathological waltz, the pulsation of the heart in a female inmate of the Royal Infirmary of Glasgow: the case is one of hypertrophy. Dr. Johnson observes, "the bars, crotchets, quavers, and demiquavers, are tunefully arranged, and form one of the greatest curiosities in morbid anatomy which we have ever witnessed."

Page 31.—Remedies. Dr. Malden, of Worcester, a physician of talent and experience, in his communication to Dr. Hastings, has given his opinion in favour of the bleeding system. Sometimes, if not frequently, at the "very onset of inflammation of the lungs," even when the patient complains of *great weakness*, &c. (quoting Huxham as his text) "In such cases, letting of blood is so far from weakening that it really raises the powers of nature"! In some "very violent cases," which are mentioned, "nothing but *immediate* and *large* bleedings" can save the patient. Dr. Malden, *in opposition*, as it would seem, to the certainly profound and extensive researches of Dr. Baron, infers the almost, if not altogether, identity of the morbid processes of scrofula and tubercular Consumption; and that, in both cases, the tubercular degeneration is preceded by an unusual or preternatural fulness of the blood vessels of the part, but leaves undecided the question whether or not this surcharge be a necessary adjunct of inflammation. As to the curative part, after quoting Pringle about bleeding, the first of his curative means is, as a matter of course, *bleeding:* "the subtraction of small quantities of blood from the *venous* system at short intervals!"

To the remedies, which are sufficiently multifarious and which we have just glanced at, we might have added live snails, which have been chuckled up *con amore;* and Dr. Hamilton, in his His-

tory of Medicine, gives us an instance of a phthisical invalid, who became, in the last stage of the complaint, a voluntary exile of the uninhabited island of Testigos, on the Spanish main: by living on *raw turtle*, "his drink the crystal well," and early rising, he at length returned in renovated health to his astonished friends.

Page 75.—CONTAGION. In reference to the contagious nature of Consumption, it may be observed that a disease in some circumstances may be contagious and not in others. This is the case in typhus fever. Dr. M'Lean, well known for his violent opposition to quarantine laws, observes, that the dread of contagion in phthisical cases is very great in Spain, and mentions the case of a young gentleman of Guernsey, residing in Valencia, in 1821, who being in the last stage of Consumption, the family informed Dr. M'L. that it would entail on them a troublesome series of purifications, lustrations, and white-washings. The cholera has not been supposed contagious in India, but it is said by some to have assumed a contagious character by its migration to Russia.

Page 79.—CLIMATE. In reference to Rome, as a residence for pulmonary disease, Dr. Johnson, in his very interesting work on "Change of Air," &c. observes, "I need hardly say that hemorrhage, or bleeding from the lungs, is one of the most common precursors, causes, and accompaniments of Pulmonary Consumption; and this fact, taken in conjunction with all that has been offered respecting the climate of Rome, one of the most favourable of the Italian climates for Consumption, ought to inspire serious doubts as to the propriety of directing phthisical invalids to the eternal city." *Sudden death* is common at Rome; Dr. Johnson says it is sometimes sporadic, and sometimes epidemic, and that the climate of Rome is extremely hostile to the brain and nervous system.

Moorcroft, among the mountainous chain of the Himālā, during his sojourn at Niti, was much surprized at the extraordinary vicissitudes of heat and cold; the thermometer having varied from 70° to 80° between morning and evening. Such extraordinary mutations one would imagine likely, not only to prove injurious, but to destroy human life altogether. Tebreez, which is esteemed one of the most healthy cities of Persia, affords an evidence that intense cold in winter is not incompatible with the enjoyment of health. During the month of January, Mr. Morier says, the thermometer at night was never above zero, and in the house, at mid-day, seldom above 18°F. Water became almost instantaneously solid in tumblers on the dinner table. Ink froze in the ink-stand, though the table was close to the fire. Not an egg was to be had; all being split by the cold. Some bottles of wine froze, though covered with straw; and many of the copper ewers were split by the expansion of the water frozen in them.

Somerton, Printer, Mercury-Office, Bristol.

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